United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
764 Horizon Drive, Building B
Grand Junction, Colorado 81506-3946

IN REPLY REFER TO:
ES/GJ-6-CO-03-F-006
MS 65412 GJ

July 2, 2003

Richard C. Stem, Deputy Regional Forester
U.S. Forest Service, Rocky Mountain Region
P.O. Box 25127
Lakewood, Colorado 80225-0127

Dear Mr. Stem:

This document transmits the US Fish and Wildlife Service's (Service) final biological opinion based on our review of the biological assessments (BA), for 32 projects submitted for batched consultation and effects to the threatened Canada lynx (*Lynx canadensis*), in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq*.). This office received your request for consultation on April 2, 2003.

As you may already know, the District Court for the District of Columbia issued an order on December 26, 2002, that enjoins the Service from issuing any 'written concurrence[s]' that actions proposed by any Federal agencies 'may affect, but are not likely to adversely affect' the Canada lynx. Until further notice, all consultations concerning effects to Canada lynx must be conducted in accordance with the direction of the Court. Specifically, any actions subject to consultation that may affect Canada lynx require formal consultation as described in 50 CFR 402.14 and preparation of a biological opinion that addresses how the proposed action is expected to affect Canada lynx in order to complete the procedural requirements of section 7.

In light of the court decision discussed above you requested formal consultation on 32 projects considered to be of "high priority" within Region 2 of the U.S. Forest Service (Forest Service). The biological opinion that follows, will address each project individually, consistent with the Court's ruling. All projects were determined, by the Forest Service, to "may affect, not likely to adversely affect" the Canada lynx. Effects assessments were made comparing project effects to standards and guidelines within the Lynx Conservation Assessment and Strategy (LCAS) (Ruediger et al. 2000), and the Colorado Canada lynx project screens, developed to streamline lynx consultations within the State of Colorado. Criteria used within the project screens are biologically more conservative than LCAS standards and guidelines, and consultation resulted in concurrence for those actions that may affect, not likely to adversely affect at the project level.

Other Federally listed species were also included and dealt with under the normal section 7 context, and concurrences are provided with individual project discussion. Species that may be adversely affected by any one of the proposed actions are considered with that action and are included within this biological opinion.

Two of the projects submitted for this batched consultation were done so by mistake. The Tie Camp portion of the Tie Camp/Dinner Park Timber Sale, and the Lost Cabin Mine and Mineral exploration projects have been withdrawn from this batched concurrence, and were submitted to the Cheyenne, Wyoming Ecological Services office for individual consultation. A third project, Wetmore Forage Improvement and Fuels Reduction, was returned to the Pike and San Isabel National Forest and Comanche-Cimarron National Grasslands due to insufficient information related to impacts to the Mexican spotted owl (*Strix occidentalis lucida).*

Consultation History

Your letter requesting consultation regarding the Batched Projects was received in our office on April 2, 2003. A complete administrative record of this consultation is on file in the Western Colorado Ecological Services Field Office.

The Service issued a biological opinion in October 2000, which evaluated the effects of implementing the current Forest Plans and Land Use Plans of the Forest Service and the Bureau of Land Management. The October 2000 biological opinion concluded that the implementation of current forest plans, in conjunction with the Conservation Agreement between the Forest Service and the Service (February 7, 2000), which includes the consideration of the LCAS, may result in some level of adverse effects to lynx.

On May 30, 2001, the Service issued a concurrence letter subsequent to a request by the Forest Service to re-authorize the Programmatic Agreement for Canada lynx in Colorado. Included in the Agreement are criteria, in the form of screens, designed to evaluate the impacts of Forest Service actions to Canada lynx. Upon meeting the criteria set forth in the Agreement, individual actions were granted concurrence from the Service. Actions meeting the criteria were simple, straightforward actions, which will have documentation supporting insignificant and/or discountable effects to lynx. Subsequent to the Court's December 26, 2002, decision, use of the screening process has been discontinued to comply with the Court's order. Currently, these screens are being used as a tool to demonstrate that actions meeting the screening criteria result in insignificant and/or discountable effects to the Canada lynx.

A few of the individual projects included in this batched consultation do have a consultation history. Consultation histories for individual actions are provided below.

<u>Breckenridge Ski Area Improvements (BSA)</u>

BSA previously completed formal section 7 consultation with the Service for a portion of the existing snowmaking system. The consultation occurred in 1986 and 1987, culminating in a "non-

jeopardy" biological opinion issued by the Service on April 7, 1987. As part of the consultation process, BSA contributed money to a fund supporting conservation measures established to mitigate potential impacts to downstream threatened and endangered fish species in the Colorado River. The Service acknowledged receipt of the compensatory payment in the April 7, 1987, letter from Robert Ruesink (Service Field Supervisor) to Gary Cargill (Forest Service Regional Forester). BSA compensation was based on 300 acre-feet of water diversions resulting in 75.0 acre-feet of water depletions and consumptive use, assuming a 25 percent loss from snowmaking due to sublimation, evaporation, and runoff losses.

As part of a subsequent BSA snowmaking expansion that included planning for future expansions, the White River National Forest underwent programmatic consultation with the Service in 1993 covering an additional 447 acre-feet of diversions and an additional 102.8 acre-feet of depletions (assuming a 23 percent consumptive loss) on BSA. Thus, a total of 747 acre-feet of diversions and 177.8 acre-feet of depletions have been consulted on with the Service for BSA.

Compensatory payment was one of the reasonable and prudent alternatives identified by the Service in their final biological opinion (ES/GJ-6-CO-93-F-036) issued to the Forest Service on September 7, 1993, to avoid "jeopardy" to the four endangered fish species. Since the Forest Service was the lead agency in the programmatic Environmental Impact Statement, they were the appropriate agency to make the compensatory payment into the conservation fund, to be reimbursed after notifying water users of their proportionate share. However, the Service was unable to locate records documenting that the Forest Service made the compensatory payment to the conservation fund (T. Ireland, USFWS, pers. comm.). To resolve this issue, it was assumed that compensatory payment associated with the 1993 consultation was not made into the fund. BSA was ultimately responsible for the compensatory payment for their additional 102.8 acre-feet of depletions. Therefore, a check from BSA was issued to the conservation fund for the full depletion at the current compensation rate (R. Sramek, BSR, pers. comm.). This information is disclosed to clarify and facilitate the reaffirmation of previous consultation.

The razorback sucker was listed as an endangered species and addressed during the 1993 Service consultation, but not during the 1987 consultation. Therefore, the 1987 biological opinion did not specifically address this now endangered fish. However, the same type of water depletions and related effects adversely affecting the Colorado pikeminnow (*Ptychocheilus lucius*), humpback chub (*Gila cypha*), and bonytail (*Gila elegans*) are the same factors identified as adversely affecting the razorback sucker (*Xyrauchen texanus*). If potential water depletion impacts related to BSA were mitigated for the three former fish, mitigation measures would also avoid impacts to the razorback sucker. The Service was contacted to provide guidance on this issue. Their opinion was that the Service could write the Forest Service an amended biological opinion adding the razorback sucker to the former analysis, but the depletion had already been consulted on and the Service would not require any additional compensation or consideration for the razorback sucker (P. Schrader Gelatt, USFWS, pers. comm.). Therefore, this documentation is all that is required for the Forest Service to disclose and resolve this issue.

A total of 747 acre-feet of diversions and 177.8 acre-feet of depletions have been consulted on with the Service for BSA. Breckenridge Ski Resort's (BSR) current snowmaking diversion requirements total 569.6 acre-feet of water per year for snowmaking with a corresponding consumptive use of 113.9 acre-feet (per 20 percent depletion rate[1], M. Williams, Resource Engineering, pers. comm.), based on the most recent 2002-2003 operating records available from the Clinton Ditch and Reservoir company. Water use, at the two existing on-mountain restaurants, totals 7.4 acre-feet of diversions and 0.4 acre-feet of depletions. This use does not include water demand associated with the approved, but unbuilt Peak 7 Restaurant, which was anticipated to be connected to the Vista Haus water system when approved (USFS 1998, M. Williams, Resource Engineering, pers. comm.).

There is no record that water use associated with the existing on-mountain restaurant facilities, approved via previous National Environmental Policy Act (NEPA) analyses, have undergone section 7 consultation. Therefore, it is appropriate to include this use to bring it into compliance. Although total water use at BSR, with the inclusion of the restaurant water, would remain well below amounts authorized via section 7 consultation, this represents a different type of water use than that previously authorized for snowmaking. The Service (P. Schrader Gelatt, USFWS, pers. comm.) was contacted to determine if this different type of use would require a reinitiation of consultation. It was determined that because; (1) the inclusion of restaurant water would not cause BSR to exceed water amounts authorized through previous section 7 consultation, (2) restaurant water would practically replace snowmaking water, and (3) use of restaurant water would actually result in less water depletions than a comparable amount of snowmaking water[2], reconsultation for the maximum of 0.5 acre-feet of water depletions associated with the three restaurants under Alternatives 1-3 would not be required because the effects of this changed water use on the four big river fish would be insignificant, discountable, and within the effects previously considered in previous section 7 consultation.

In conference with the Service on the effects to the proposed threatened Canada lynx, the BSR Peaks 7 and 9 Facilities Improvement Plan received a "may affect, not likely to jeopardize" concurrence for lynx from the Service in a letter dated January 29, 1999. Following the lynx's listing and the preparation of a supplemental BA, the project's determination was updated to "not likely to adversely affect", as documented in the Service's September 11, 2000 concurrence letter.

The BSR Peak 9 Lifts and Facilities Improvement Plan received a "not likely to adversely affect" concurrence from the Service in a letter dated April 30, 2002.

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[1] The water balance used in Forest Service (1998) computed depletions to be 22 percent of diversions. Using an improved climate data set and analysis, current water balance modeling indicates depletions of approximately 18 percent of diversions. The 20 percent assumption used herein is to remain consistent from a water rights perspective with the 20 percent number agreed upon in the Clinton-Fraser agreement.

[2] Using an improved climate data set and analysis, current water balance modeling indicates water depletions resulting from snowmaking are approximately 18 percent of diversions. The 20 percent depletion rate used herein is for consistency from a water rights perspective with the 20 percent number agreed upon in the Clinton-Fraser agreement. Water delivered from the restaurants to Breckenridge Sanitation District's central wastewater facilities results in a 5 percent water depletion. Therefore, water used for restaurants rather than snowmaking would result in 15 percent less consumptive water loss.

White River Resort Special Use and Outfitter/Guide Permit Renewal

The original special use permits for the resort and for the outfitter/guide activities were consulted on for Canada lynx in 2000 as part of a regional "lynx screening" process that was developed following the listing of the Canada lynx. As part of the 2000 screening process, the Service, in a letter dated May 20, 2000, concurred with a determination of "not likely to adversely affect" for lynx for the original project as an on-going activity.

Allen Creek Project

There has been no prior consultation related to the Allen Creek Project.

Bailey and Parker Private Road Easements

In a letter dated December 27, 2002, the Service issued a letter of concurrence for the proposed Bailey Private Road Easement and the Parker Private Road Easement. Unknown to the Service at the time, the District Court for the District of Columbia issued an order on December 26, 2002, that enjoined the Service from issuing any written concurrences for actions proposed by any Federal agencies that "may affect, but are not likely to adversely affect" the Canada lynx. Therefore, on January 15, 2003, the Service issued a concurrence rescission notice for the subject project to comply with the Court's order.

Derby Mesa Wildlife Prescribed Fire

This action has not been consulted on. However, the current action is included as an addition to a previous action called the Derby Mesa Timber Sale. The Derby Mesa Timber Sale was provided concurrence for a "may affect, not likely to adversely affect" determination through the 2000 "lynx screening" process on May 16, 2000, where the Service provided blanket concurrence for projects meeting specific criteria.

Little Box Project

Section 7 consultation has not been conducted on this action in the past, however, additional information was provided by the Forest Service.

Markley Hut Reconstruction

There has been no prior consultation related to the Markley Hut Reconstruction Project.

Vail Ski Area 2003 Mountain Pine Beetle Control Timber Sale

There has been no prior consultation related to the Vail Ski Area 2003 Mountain Pine Beetle Control Timber Sale.

Frisco Nordic Center

There has been no prior consultation related to the Frisco Nordic Center.

South Game Creek Land Exchange

There has been no prior consultation related to the South Game Creek Land Exchange.

West Lake Creek Land Exchange

The Service received a request on November 21, 2002, for informal consultation through the submission of a BA for the West Lake Creek land exchange in Eagle and Pitkin counties on the White River National Forest. On February 6, 2003, the Service responded to the request with a letter, informing the Forest Service that the Service had been enjoined from issuing concurrence letters for actions that may affect, but not likely adversely affect the Canada lynx.

Woods Lake Hydroelectric Project

On December 5, 2002, the Service received a request for concurrence of effects to listed species as a result of the re-authorization of the Woods Lake Hydroelectric license. On December 27, 2002, the Service concurred with your determination of "may affect, but not likely to adversely affect" the Canada lynx. On January 17, 2003, the Service issued a rescission letter for the subject project due to the District Court for the District of Columbia, December 26, 2002, decision enjoining the Service from issuing concurrences for actions that may affect, but are not likely to adversely affect the Canada lynx.

Missionary Ridge Burned Area Timber Salvage Project

There has been no prior consultation related to the Missionary Ridge Burned Area Timber Salvage Project.

Millswitch Vegetation Management Project

On October 1, 2002, the Service received a request for concurrence for effects to the Canada lynx from the Millswitch Vegetation Management Project. On December 27, 2002, the Service responded with a letter stating that the BA did not contain sufficient information for us to concur with the assessment of the proposed action. Additional information has been provided via mail, and e-mail.

Snowshoe and Ruby Grazing Allotment Permit Renewals

There has been no prior consultation related to the Snowshoe and Ruby Grazing Allotments Permit Renewals.

Galloping Goose Trail

There has been no prior consultation related to the Galloping Goose Trail project.

The Nature Conservancy's Small Tracts Acquisitions

On December 23, 2002, the Service received a request for concurrence for effects to the Canada lynx from the Nature Conservancy Small Tracts Acquisition. On February 6, 2003, the Service responded to that request with a letter that discussed the District Court for the District of Columbia issuance of an Order on December 26, 2002, that enjoined the Service from issuing any written concurrences for actions proposed by any Federal agencies that "may affect, but are not likely to adversely affect" the Canada lynx.

James Lucas Small Tracts Act/Land Interchange Project

There has been no prior consultation related to the James Lucas Small Tracts Act/Land Interchange Project.

Sheep Creek II Vegetation Management Project

The Service received the BA on April 4, 2003. This project had been informally consulted on with the Service during the preparation of the BA. Verbal communication was exchanged to address concerns regarding the greenback cutthroat trout (*Oncorhynchus clarki stomias*) and Canada lynx. Notes from these meeting are on file as part of the administrative record.

La Manga Beetle Salvage Sale

There has been no prior consultation related to the La Manga Salvage Sale.

Buffalo Pass Campground – Tres Cabras Timber Sale

There has been no prior consultation related to the Buffalo Pass Campground – Tres Cabras Timber Sale.

Spruce Hole Blowdown Small Sale

There has been no prior consultation related to the Spruce Hole Blowdown Small Sale.

Outfitter–Guide Special Use Permit Renewal

The Outfitter–Guide Special Use Program on the Rio Grande National Forest has received biological assessment through the revision of the Forest Plan. The Forest Service received Service concurrences for "may affect, not likely to adversely affect" determinations for bald eagle (*Haliaeetus leucocephalus)*, peregrine falcon (*Falco peregrinus*), Uncompahgre fritillary

butterfly (*Boloria acrocnema*), Mexican spotted owl, and southwestern willow flycatcher (*Empidonax traillii extimus*) in 1996. Since 1996, the peregrine falcon has been de-listed (1999) and Canada lynx was listed as threatened (2000). Because of the change in status of these species, it became necessary to re-open the project for consultation. On July 8, 2002, the Service received a request for consultation on the effects of the permit issuance program for outfitter and guide activities on the Rio Grande National Forest. Specific criteria were analyzed during the consultation at the programmatic level for future actions related to the issuance of permits. In a letter dated September 4, 2002, the Service concurred that the effects of the programmatic issuance of outfitter and guide permits "may affect, not likely to adversely affect" the Canada lynx.

Project themes of Special Use Permits have been conceptually reviewed for potential impacts to Canada lynx and section 7 consultation concurrence through the development of the Southern Rocky Mountains Section 7 Lynx Project Decision Screen as a portion of the authorized June 4, 2001, Service/Forest Service Canada Lynx Consultation Agreement.

Aspen Ridge Road Easement and Plowing Authorization

The Routt National Forest initiated informal consultation with the Service on July 26, 2002, requesting concurrence of "may affect, not likely to adversely affect" determination to the Canada lynx regarding project effects. The Forest Service provided additional information via phone conversations and a supplemental document dated October 11, 2002. A letter dated December 27, 2002, from the Service concurred with the Forest Service determination. The concurrence was rescinded to comply with the December 26, 2002, Court Order.

Box Creek Watershed Restoration Project

The Canada Lynx Programmatic Concurrence was not used as the project does not meet the Service Southern Rocky Mountains Decision Tree (July 6, 2001 version) and Forest Service blanket concurrence criteria (May 30, 2001). The project involves a travel management plan and treatment of denning and foraging habitat and is therefore outside the blanket concurrence.

Forest Service wildlife biologist Cecilia McNicoll provided background information concerning the Box Creek Watershed Restoration Project to the Service in 2001. On December 31, 2002, the Service concurred with a "not likely to adversely affect" determination regarding project effects on lynx. The concurrence was rescinded to comply with the December 26, 2002, Court Order.

Green Ridge Mountain Pine Beetle Treatment

Informal consultation on this action consists of numerous phone conversations with Forest Service biologists during project development. There have not been any consultations completed for this action in the past.

Lost Park Grazing Allotment

There has been no prior consultation related to the Lost Park grazing allotment.

Weiham Driveway Construction

No previous consultation history. The Canada Lynx Programmatic Concurrence was not used as the project does not meet the Service Southern Rocky Mountains Decision Tree (July 6, 2001 version) and Forest Service blanket concurrence criteria (May 30, 2001). The project involves a road construction and is therefore outside the blanket concurrence.

Bear River/Dunckley Pass/Lower Trout Creek Prescribed Burns

No previous consultation history

Webster Pass Mining Exploration 2003

The Pike San Isabel National Forest informally consulted with Service biologist Leslie Ellwood on February 25, 2003, concerning the proposed Webster Pass Mining Exploration 2003 project impacts. The project was determined to be within the scope of the 2001 decision screen, which led to a may affect, not likely to adversely affect determination. Service biologists Leslie Ellwood and Kurt Broderdorp discussed actions with the Forest Service on associated drilling projects in 2002, which were screened using the 2001 screening criteria. A 2001 project outside of lynx habitat did not require consultation.

Mount Massive Route Stabilization Project

Informal consultation occurred on January 15, 2003, between Service biologist Kurt Broderdorp and Forest Service wildlife biologist Kevin Laves. The Service concurred that the project meets the criteria of the Southern Rocky Mountains Decision Tree (July 6, 2001 version) and the Forest Service blanket concurrence received from the Service (May 30, 2001). The concurrence was rescinded to comply with the December 26, 2002, Court Order.

Dinner Park Timber Sale

In March 1997, the Forest Service received a biological opinion from the Service in response to a formal consultation request on the effects of the current Routt National Forest Land and Resource Management Plan (LRMP). The biological opinion concurred with the Forest Service finding that implementation of the LRMP would have beneficial effect or no effect on listed species under the Act.

Since that time, the peregrine falcon has been de-listed (from it's endangered status) and the bald eagle has been down-listed from endangered to threatened. In addition, the Canada lynx was listed as threatened in March 2000.

Conference for Canada lynx between the Service and Forest Service within Colorado occurred in May 2000. A Programmatic Blanket Concurrence was given for a list of projects that was submitted for that process; the Dinner Park Timer Sale was included for the Parks Ranger District (project number 0042). At that time, the Tie Camp Environmental Impact Statement (EIS) was being finalized and consultation on the Tie Camp EIS (including the portion in Colorado) was conducted with the Service Cheyenne Field Office in Wyoming.

Informal technical support from Service biologist Kurt Broderdorp, in June 2001, confirmed the status of the Dinner Park Timber Sale as covered by consultation requirements due to this sale listed in the May 2000 package and due to the re-issuance of the June 2001, Programmatic Concurrence 4. A supplemental BA is needed to confirm the timber sale still meets the criteria of the Programmatic Concurrence (USFWS/USFS June 2001) and the Southern Rocky Mountain Lynx Decision Tree Screening Process (USFWS/USFS May 2001).

The original supplemental BA for Canada lynx (D. Austin, June 19, 2001) identified the Dinner Park Timber Sale within the Encampment River Lynx Analysis Unit (LAU). After review of all LAUs within Colorado, the Forest Service and the Service discussed changing LAU boundaries to address specific habitat concerns and to become consistent with the rest of the Forest Service. Region 2 subsequently completed the remapping in agreement with the Service. As a consequence of remapping, the Dinner Park Timber Sale is now located north of and outside the boundaries of the Encampment River LAU. It should be noted that remapping occurred independently of the location of the Dinner Park Timber Sale

BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

Within this biological opinion, the Service evaluates individual actions and the resulting effects to Canada lynx. Effects analyses are based on the effects of the action within the action area. The action area for individual actions analyzed in this biological opinion is the LAU, in consideration of the baseline condition of the individual LAU, or LAU's if actions overlap into more than one. The LAU is set as the action area because, the LCAS was developed is a manner, which sets up the vegetative requirements of theoretical home range (LAU), to support an individual lynx. Analysis of each action is based on how an action will affect the theoretical home range of an individual lynx. Analysis of each action stands alone in considering the effects to Canada lynx. The Service will then evaluate all 32 projects as a whole where the action area includes the entire Southern Rockies Ecosystem.

<u>Breckenridge Ski Area Improvements</u>

BSR proposes to construct the previously approved, but un-built, Peak 7 Restaurant in an alternate location. The previously approved location of the Peak 7 Restaurant is approximately 100 feet south of the Independence SuperChair top terminal at 11,300 feet elevation. The proposed site for relocation of the Peak 7 Restaurant is just downhill of the Peak 7/8 Road and

between the existing Claimjumper and Pioneer Trails at 10,000 feet elevation. An approximately 40,000-gallon underground water storage tank is also proposed to serve the Peak 7 Restaurant. It would be located upslope of the Peak 7 Road, in the existing Claimjumper Trail, in line with the proposed water line.

Utilization of the facility may include winter daytime as well as summer day and nighttime usage. BSR is not proposing any winter nighttime use at the Peak 7 Restaurant at this time. The Peak 7 Restaurant is proposed for use, as a ski season daytime restaurant and venue for summer weddings. Summer events would run from approximately June through September, 9:00 a.m. to11:00 p.m., primarily on weekends. BSR is not proposing any summer use or winter nighttime use of the Independence SuperChair. The lift could only be used to access the restaurant during the ski season and normal lift operating hours. Summer transportation to and from the Peak 7 Restaurant would be primarily in personal vehicles, with the existing 7/8 Road continuing to be administered as gated access. Parking for 30-50 cars, would be accommodated by the grading, that would occur for landscaping and the winter milling area. BSR may run a shuttle to and from the site for larger events.

In conjunction with the proposed relocation of the Peak 7 Restaurant site, a mid-station unloading facility, for the Independence SuperChair, is also proposed. The mid-station unloading would provide lower ability level skiers the option of skiing only the gentler lower half of the Peak 7 trails instead of having to ride the lift to the top. In addition, the mid-unload provides better, more direct access to the alternate location of the Peak 7 Restaurant for lower ability level skiers by not requiring them to ride the lift to the top and then ski more advanced level terrain to reach the skier services provided. The mid-unload would require 0.7 acres of ground disturbance within the existing Pioneer Trail immediately above the existing Peak 7 Road. No tree removal would occur.

BSR proposes to add snowmaking to the existing Country Boy/Eldorado Trail located on Peak 9 within the A Lift pod. The proposed additional coverage area would be approximately 18 acres. The additional coverage would provide approximately 4,400 feet of trail length with snowmaking in a highly utilized area of the resort. Adjacent air and water lines would be buried on the north side of the trail with a maximum disturbance width of approximately 40 feet. Hydrants would be installed approximately every 100 feet to allow for maximum operational flexibility.

A new water diversion structure, treatment facility, and water line for potable water supply to the existing Vista Haus Restaurant and the previously approved Peak 7 restaurant (proposed new location) is proposed. An infiltration gallery is proposed on Sawmill Creek approximately 110 feet south of the existing bottom terminal of E Lift. In addition, a small water treatment facility is proposed to be located approximately 120 feet northeast of the existing bottom terminal of E Lift. The proposed buried water line would originate at the water treatment facility proposed on Sawmill Creek, run north to the Vista Haus, and continue on to the Peak 7 Restaurant.

The Vista Haus segment of the water line (approximately 3,330 feet) would originate at the treatment building and traverse north, utilizing the existing Frosty's Trail, to terminate at the Vista Haus. Continuing from the Vista Haus, the final segment (approximately 6,311 feet) would run north along the existing Columbine Trail, then south on the Claimjumper Trail to a short spur north on the existing Peak 7 Road, to terminate at the alternate location proposed for the Peak 7 Restaurant.

Potable water needs at the existing Peak 9 Restaurant are currently provided by an aging diversion structure and water line originating in Lehman Gulch. BSR proposes to improve the existing surface diversion structure, line the existing retention pond, and replace the aging and undersized water line within the existing disturbance corridor. The current infiltration point is approximately 1,484 feet southeast of the existing top terminal of the Mercury SuperChair. The proposed buried water line would originate at the upgraded water treatment facility and run north to the existing Peak 9 Restaurant. The proposed water line would occupy an abandoned mountain access road corridor and cross Upper Lehman, Briar Rose, and Cashier ski trails in approximately the same alignment as the existing water line.

White River Resort Special Use and Outfitter/Guide Permit Renewal

There are three components to the proposed action: 1) renewal of an existing permit for the operation of a resort with the inclusion of fuel reduction treatment around the resort, 2) renew the existing grazing permit for use of horses at the resort, and 3) renew the existing outfitter/guide permit.

The resort is located at about 9,040 feet elevation along the south fork of the White River (SE ¼ of section 26, T. 2 .S, R. 89 W.) about 30 miles northwest of the town of Eagle in Garfield County, Colorado.

Proposed new uses include a family cabin with water and sewer system; and a conference cabin (occupancy 8 guests) with water and sewer system. These new facilities have been included in the Resort's Master Plan since 1984 but have never been constructed. The proposed action is to renew the 1984-operating permit for an additional 20 years beginning in 2003.

The proposed action will cause an average annual depletion of 0.06 acre-feet, and will cause a total average annual historic depletion of .20 acre-feet to the South Fork of the White River in the Upper Colorado River Basin.

A Recovery Implementation Program for Endangered Fish Species in the Upper Colorado River Basin was initiated on January 22, 1988. The Recovery Program was intended to be the reasonable and prudent alternative to avoid jeopardy to the endangered fishes by depletions from the Upper Colorado River Basin.

In order to further define and clarify the process of the Recovery Program, a section 7 agreement was implemented on October 15, 1993, by the Recovery Program participants. Incorporated into this agreement is a Recovery Implementation Program Recovery Action Plan, which identifies actions currently believed to be required to recover the endangered fishes in the most expeditious manner.

Included in the Recovery Program was the requirement that a depletion fee would be paid to help support the Recovery Program. On July 8, 1997, the Service issued an intra-Service biological opinion determining that the depletion fee for depletions of 100 acre-feet or less are no longer required because the Recovery Program has made sufficient progress to be the reasonable and prudent alternative to avoid the likelihood of jeopardy to the endangered fishes and to avoid destruction or adverse modification of their critical habitat by depletions of 100 acre-feet or less. Therefore, the depletion fee for this project is waived. The Forest Service should condition its approval documents to retain jurisdiction should section 7 consultation need to be reinitiated. Additionally, the biological opinion stated that sufficient progress has been achieved such that small historic depletions do not require implementation of items in the Recovery Action Plan in order for the projects to proceed. Therefore, no further consultation is required. The determination in this document is based on the information provided by the Forest Service.

The resort permit renewal includes measures to treat fuels surrounding the resort to reduce the chance that the resort structures would burn as a result of a natural wildfire. The following measure has been incorporated into the proposed action:

The previously approved, but still un-built, family and conference cabins will be located where they do not require permanent clearing of conifer forest or additional stand density management treatments beyond that required to protect the current structures.

Grazing privileges will be reissued for 36 horses from July 1 to September 30 (110 animal months) in the Upper South Fork grazing allotment. The horses are rotated between four pastures along about 4.5 miles of the south fork of the White River.

White River Resort is applying for the re-issuance of a special use permit for 1,850 guided recreational user days and 120 animal months on the Eagle and Blanco Ranger Districts. The main activities are horseback riding, fishing, and hunting. One thousand, one hundred and twelve service days will originate from the White River Resort and include summer and fall activities. The remainder of the activities will include 92 summer service days and 646 fall service days based out of 14 camps on Forest Service lands in the South Fork of the White River drainage. There will also be a day-use warming tent camp associated with the fall day-use activities originating from the resort. The camps are located in sections 2, 3, 10, 14, 15, 17, 21, 27, and 29, T. 2 S., R. 89 W.; section 33, T. 1 S., R. 88 W.; and sections 5, 9, 15, and 17, T. 2 S., R. 88 W., and range in elevation from about 8,890° to 10,960° elevation. Activities that could result in snow compaction are not contemplated as part of the proposed action. The proposed renewal of the outfitter/guide special use permit will not create any new recreational activities or new modifications of existing habitat.

Allen Creek Project

The Allen Creek Project is located on the Blanco Ranger District of the White River National Forest, and was developed to improve age class and species diversity, improve forest health, improve wildlife habitat and provide forest products while meeting Forest Plan direction for all affected resources. This project was designed to achieve a balance of resource objectives. The proposed action would manage the vegetative landscape in the project area through commercial timber harvest, non-commercial timber treatments and prescribed fire. Approximately 700-840 acres of vegetation would be treated. Methods of commercial timber harvest would include clear-cutting *Pinus contorta* (lodgepole pine) and *Populus* (aspen) for regeneration; sanitation/salvage of *Picea engelmanni* (Engelmann spruce) and lodgepole pine for insect/disease prevention and/or suppression; and thinning in small diameter lodgepole pine to improve residual tree growth and vigor. Approximately 3.0-4.5 million board feet of forest products will be harvested.

Approximately 80-100 acres of lodgepole pine would be harvested to stimulate lodgepole pine regeneration and increase the amount of snowshoe hare (*Lepus americanus*) habitat in the project area. Snowshoe hare are the primary prey species for Canada lynx. Harvest is designed to move vegetation into a seedling/sapling size class. Dense lodgepole pine regeneration with crowns in contact with winter snowline would provide browse and hiding cover for snowshoe hare.

Approximately 150-190 acres of aspen would be harvested to promote regeneration and increase age-class diversity of aspen stands. In addition to providing age-class diversity, approximately 50 percent of the aspen regeneration treatments would be placed adjacent to coniferous forest to provide browse and hiding cover for snowshoe hare populations.

Approximately 200-225 acres of Engelmann spruce would be harvested to suppress spruce bark beetle populations. Insect infested and some of the dead Engelmann spruce would be removed. An additional 70-300 acres of Engelmann spruce would be monitored for spruce bark beetle infestations. Non-commercial spruce bark beetle suppression treatments would occur in sensitive areas, inaccessible areas, or areas not economically feasible to commercially harvest. Non-commercial treatments include placing trap trees and removing the bark of these trees when infested with spruce bark beetles. In addition, pheromone traps would be placed to monitor spruce bark beetle populations. Engelmann spruce seedlings would be planted in the event of an extensive spruce bark beetle outbreak and subsequent loss of mature Engelmann spruce.

Approximately 55-65 acres of small diameter lodgepole pine would be thinned to improve the health and vigor of residual trees within selected high-density stands. Individual trees less than 7.0 inches in diameter that have self pruned at least two feet above the average snow line would be removed as forest products or left on site for nutrient recycling. Trees selected for removal would reduce competition among residual trees.

Approximately 115-140 acres of lodgepole pine would be sanitized to prevent and/or suppress centralized dwarf mistletoe infestations and protect residual lodgepole pine stands in the area.

Individual trees with infestations of dwarf mistletoe would be selected for removal or infected branches pruned to reduce the spread of the disease into healthy trees. The majority of this treatment would occur on the perimeter of previous lodgepole pine clear-cuts that are fully stocked with sapling sized lodgepole pine regeneration.

Prescribed fire would be used to regenerate approximately 100-120 acres of lodgepole pine in areas where vegetation is of low quantity/quality and is not feasible to treat with commercial timber harvest. A low intensity fire would be applied to consume smaller fuels and kill larger trees to stimulate reproduction to improve snowshoe hare habitat.
Commercial harvest operations would be conducted using conventional ground based logging systems. Approximately 9.5 miles of specified road spot reconditioning, approximately 4.9 miles of specified road reconstruction/reconditioning and approximately 1 mile of road reconstruction (reroutes) would be necessary. Three small gravel pits would be developed to provide materials for the specified roadwork. These pits would be restored following completion of the specified roadwork. Approximately 3.0 miles of temporary road would be necessary to access proposed cutting units. These temporary roads would be closed to the public for summer-motorized use and obliterated upon completion of harvest activities.

Bailey and Parker Private Road Easements

Bailey Road Easement: The proposed action is granting of a private road easement for access to a private inholding. There is an existing unimproved road to the property that passes through National Forest System (NFS) land. This is the route that is proposed for the easement. The proposed access road may be improved by grading. The proposed access road is reached by following FDR 1000 (Miners Creek Road) for approximately ¼ mile. The private property is located ¼ mile up the proposed access road. The entire ½ mile on NFS land will need to be plowed for winter access. No vegetative manipulation is required for this action.

Parker Road Easement: The proposed action is granting of a private road easement for access to the Chatauqua Extension North (MS 20666), a 20.483-acre parcel of private land surrounded by NFS lands. Access is currently provided to the parcel by using the existing Deer Creek Road (Summit County Road 5), for about 1,800 feet and then using an existing driveway on NFS for approximately 180 feet. The portion of Deer Creek Road used to access the parcel is a County Road under special use permit on National Forest lands. Use of Deer Creek Road as a private driveway is subject to the conditions of the existing special use permit held by Summit County. A separate special use authorization is required for the driveway across NFS lands to the private land. All roads being considered are existing natural surfaced roads.

Currently the Deer Creek Road passes through the parcel for about 180 feet. While it is possible to access the parcel using the Deer Creek Road and not involve a separate driveway, there would be increased environmental impacts of new road construction on private lands.

A legal easement, for public use of the Deer Creek Road (County Road 5) across the Chataqua Extension North does not exist. The owner of the parcel is willing to grant the Forest Service a right-of-way easement for the Deer Creek Road in consideration for being granted the proposed driveway easement. As a condition for issuance of a private road easement the Forest Service will require such a reciprocal easement be granted.

On the south end of the Chataqua Extension North there is a second driveway (about 75 feet long) across NFS lands to the Deer Creek Road. It is not in the public interest to grant two separate access roads across NFS lands when one will adequately meet the access needs. With the issuance of the proposed driveway easement mentioned above, the secondary driveway is not required and will be obliterated as a roadway.
The total length of roadway on NFS lands is about 2,000 feet, including the portion of Deer Creek Road and the driveway. Since the roadway will be used to access a single-family residence, year round access is requested from the Forest Service.

Derby Mesa Wildlife Prescribed Fire

The Eagle Ranger District of the White River National Forest proposes to conduct control burns in the Derby Mesa area (sections 13, 14, and 25, T. 2 S., R. 86 W.) in order to increase forage quality and quantity for elk and deer, restore fire to the ponderosa pine habitat, and reduce the risk of wild fire on adjoining private lands. The proposed action will include about 121 additional acres of adjoining ponderosa pine, sagebrush, aspen, and mixed shrublands in prescribed fires for wildlife habitat benefits described in the BA. Site preparation in the wildlife burns would include cutting and removing by hand, brush, small trees, and burnable debris underneath the larger ponderosa pine and Douglas fir trees, falling of aspen trees to improve the spread of fire in the aspen plant community, and establishment of fire lines. Site preparation and burning is proposed to begin in 2003 and would be conducted over several years depending upon burn conditions and other factors. The action area for this action is limited to the Derby Mesa LAU, since the effects of this action will not be detected outside of the LAU, and there will not be any effects to any landscape linkages.

Four units are proposed to be added to the scheduled Derby Mesa burns: 1) Unit's 3a and 3b containing about 10.5 and 9 acres, respectively, lie adjacent to Unit 3 and are composed of sagebrush and open ponderosa pine/Douglas-fir forests; 2) Unit 6a, totaling about 47.5 acres, lies between Units 4, 5, and 6 and is composed mostly of sagebrush; and 3) Unit 8, totaling about 53 acres, lies adjacent to Units 5 and 6 and is composed of a mixture of mixed shrublands, ponderosa pine, sagebrush, and aspen.

A map showing the locations of the units is in the Service's project file. The following measures are incorporated into the proposed action.

> No more than about 25 percent of the sagebrush will be burned and the burning will be dispersed throughout the sagebrush habitat. This responds to input from Craig Wescoatt, Colorado Division of Wildlife (CDOW), that the burning in sagebrush create a habitat

mosaic in order to maintain mule deer winter habitat. Specific burn areas will be located in the sagebrush prior to treatment, including the creation of fire lines if necessary. Because the exact areas to be burned will be designated prior to treatment, there will be an excellent opportunity to monitor the effects of burning on sagebrush vegetation and cervid use. No evidence of Brewers sparrows or sage grouse was found during field surveys so Forest Plan standards and guidelines for those species are not applicable to the proposed treatment areas.

All large ponderosa pine and Douglas fir trees will be protected from fire by hand brushing and clearing debris around trees as needed prior to burning. In particular, any known or suspected pygmy nuthatch nest or winter roost cavity tree or snag will be protected in accordance with Forest Plan standards.

Along the edge of Units 5 and 8, some thickets of understory ponderosa pine regeneration will be protected in order to "manage for a diversity of tree density, size, age, and height classes" in ponderosa pine habitat in accordance with Forest Plan guidelines (Forest Service, 2002a:).

The burning will tier to and incorporate all design criteria of the scheduled Derby Mesa burns, including any protection measures for soils and other resources.

Little Box Project

This project located on the Rifle Ranger District of the White River National Forest proposes to remove trees infested with spruce bark beetles using sanitation harvest in the Little Box area. The project would be accomplished through a small commercial timber sale. The proposed method to remove the infested trees is through a combination of horse logging and cable logging. Horses would be used in un-roaded areas to skid logs to a main skid trail, where a rubber tired or tracked skidder would skid the logs the remaining distance to the landing. Cable logging would be used on the steeper portions of the project area. The three treatment units total approximately 60 acres, within a 300-acre project area. It is estimated that approximately 250 million board feet of timber would be removed. Elevation of the project area ranges from 9,000 to 9,300 feet. This project is planned for implementation in 2003 with only one season of operation. Due to the nature of bark beetle populations, it is important to remove infested trees as soon as possible to reduce the rate of spread.

Markley Hut Reconstruction

The proposed management action is destruction of the existing Markley Hut and reconstruction of a new Markley Hut. The existing Markley Hut is located on the west side of Express Creek at approximately 10,400 feet Mean Sea Level. The new hut will be constructed on the east side of the Express Creek drainage, approximately 1,000 feet up the drainage from the existing hut. A new route will be developed to access the new Markley Hut. The new route will use the original access road to the old hut, and be extended to reach the new hut.

Vail Ski Area 2003 Mountain Pine Beetle Control Timber Sale

This project was initiated in response to an outbreak of mountain pine beetle in the lodgepole pine trees. This is a continuation of treatments of mountain pine beetle outbreaks. The need to remove the infected trees and the control of future outbreak is primarily driven by three considerations: 1) safety concerns connected with dead trees next to ski runs, recreational trails, and roads; 2) aesthetic and economic concerns connected to the visual quality that would be diminished by large numbers of dead and dying trees on the mountainside adjacent to the communities of Vail, Avon and Beaver Creek and within a high-use recreational area; and 3) concerns about the high fire hazard that the large quantities of dead and downed woody debris would pose in the highly developed areas. This project is being conducted under a Memorandum of Understanding among the Forest Service Holy Cross Ranger District, the Town of Vail, the Colorado State Forest Service, Vail Associates, and the Gunnison Forest Health Management Service Center.

The intent is to remove infected trees prior to July 1, 2003, before the insects would begin to fly; therefore, inhibiting the spread of the beetle. Project treatments would cover about 600 acres on Beaver Creek and 700 acres on Vail and will remove about 275 infected trees on Beaver Creek and 630 infected trees on Vail Mountain. The infected trees are in groups of less than 5 trees to groups of 50 or more trees. Project management will treat the outbreaks by cutting and removing all beetle-infected trees and removing most of the dead standing timber that are a hazard to ski trails, hiking trails, and roads. In the interest of safety, lodgepole that is susceptible to blowdown or possible snow breakage will be removed in those areas that receive human activity. Snags will not be left where they would pose safety hazards, such as areas within 1.5 tree lengths of ski trails, access roads, lift lines, towers, lift shacks, rope-fence structures, catwalks, power lines and hiking trails.

In addition to the known infected trees, lodgepole pine within the project area that may become infected by early beetle emergence in 2003 may be cut and removed. The infected trees that are not accessible and cannot be cut as salvage timber sale trees will be cut, peeled, and left on site. It is anticipated that the majority of trees on the Beaver Creek Ski Area will be cut and left on site due to the low amount of trees and the steeper slopes that would limit or prevent tree removal.

It is expected that a few lodgepole pine may be infected by early beetle emergence either from infected trees missed within the project area or from insects dispersing from outside the project area. This project will harvest these newly infected trees under the following conditions: 1) the total harvest of new lodgepole pine brood trees, does not exceed five acres, 2) the harvest is limited to only infected pine trees ranging from scattered individuals to clumps of trees not exceeding 30 trees, and 3) all harvest occurs in the project area as described in Section II of the BA. If mountain pine beetle emergences in 2003 exceed the above conditions, control methods will be reevaluated and possible consultation with the Service reinitiated.

The wildlife recommendations in the 2002 Forest Plan Revision to retain snags and downed woody debris will be incorporated into the project by leaving dead trees in place except where safety concerns require removing the standing dead trees.

Frisco Nordic Center

Patch Clear-cuts: Three forest types are proposed for patch clearcut treatments (PCT), aspen, spruce (*Picea* spp.) and lodgepole pine. Within the aspen units, selected lodgepole pine and aspen will be felled to promote the expansion and sprouting of aspen stands. Aspen units will be monitored after treatment to determine the success of the aspen sprouting and if any further treatments should be performed.

Currently, spruce does not exist in the units referred to as spruce units. To promote the establishment of spruce within these units, all lodgepole pine trees will be cut and spruce planted in its place. These three units may be commercially harvested. Regeneration surveys will be done in these units after planting to determine planting success.

The goal within the lodgepole pine units is to inhibit the spread of dwarf mistletoe into previously patch clearcut units that are regenerating. None of these proposed units for patch clearcutting have a significant amount of regeneration occurring. The resulting slash from all patch clear-cuts will be lopped and scattered to a height of less than 18 inches. Timber harvesting and log removal will be accomplished with conventional ground based logging systems. Dead standing snags may be removed if they are located within 100 feet of an existing road or skid trail that is used to access any of the units.

Pre-commercial thinning is designed to reduce tree stocking and dwarf mistletoe in seedling/sapling stands and promote the growth of lodgepole pine trees. The thinning will result in future lodgepole pine stands that are more widely spaced and contain larger trees with crowns closer to the ground than overstocked stands. Most of the PCT units will be done in conjunction with the lodgepole pine patch clear-cuts. The silvicultural prescription for spacing within these units could range from 9x9 (538 trees/acre) to 12x12 (302 trees/acre). Where it exists, the spruce understory will be retained. To reduce damage to the existing spruce understory, the lodgepole pine overstory will be hand felled and not removed. Most damage to existing regeneration occurs when the logs are skidded out. This will reduce competition to adjacent spruce and prevent damage to existing seedlings.

Signposts would be permanently installed single posts. The signs will give directional information and will be removed from the posts in the off-season.

Nordic ski trail construction consists of clearing trees, shrubs, rocks, logs, etc. to provide a fairly level and smooth surface. Some grading will be necessary. The trails must be conducive to grooming. The alternatives associated with this project include trails that are six or twelve feet wide. Where possible, trails are routed between existing trees to maintain shading and reduce construction costs. On curves, it is sometimes required to increase the width of trails or remove certain trees to provide enough space for grooming equipment.

This action involves work on existing and proposed trails. The work will consist of clearing debris such as rocks and limbs off the trail surface to facilitate early season grooming and maintenance of the groomed trails throughout the ski season. The clearing may also involve trimming live or dead tree branches and mowing grass on the trails that is approximately 6 inches or taller. Work will be accomplished by hand, including the use of power equipment such as chainsaws or lawn mowers.

Yurts will be used as warming huts. These structures are temporary enclosed shelters that will be disassembled during the off-season. The yurts will cover approximately 400 square feet each. The proposal does not specify whether or not the huts may be used at night. Currently, the Nordic center officially closes at 4:00 p.m. Evening horse drawn sleigh rides occur after the trails are closed to skiers; however, they do not currently go near the proposed yurt locations. The sleigh operator maintains his own heated dining tent.

South Game Creek Land Exchange

Vail Associates (VA), in cooperation with the Town of Vail, wants to acquire 2.71 acres of Federal land, also known as the Vista Bahn parcel on the White River National Forest, located in section 8, SW¼ NW¼, T. 5 S., R. 80 W., 6th Principal Meridian, Eagle County, Colorado.

Two non-federal parcels located in Eagle County, Colorado would be given in exchange to the White River National Forest. They are the South Game Creek 120-acre parcel located in section 24, SE¼ NE¼, N½ SE¼, T. 5 S., R. 81 W., 6th Principal Meridian, and the Mud Springs 160-acre parcel located in section 22, NW¼, T. 5 S., R. 82 W., 6th Principal Meridian**.**

The South Game Creek parcel is a private in-holding within the Forest located just west of Vail Ski Area's Special Use Permit boundary. It occurs in a relatively large, isolated block of undeveloped habitat between Vail Ski Area and the Town of Minturn.

The Mud Springs parcel is a private in-holding contiguous on the north with a large block of private land extending down into Arrowhead Resort, but otherwise surrounded by NFS lands to the northwest of McCoy Park.

All exchange parcels occur on the Holy Cross Ranger District, in Eagle County. The 2.71-acre Federal parcel and one of the non-federal parcels (120 acres) are located within the Eagle Valley LAU. The other non-federal parcel of 160 acres is located within the Camp Hale LAU. This 2.71 acres of Federal land is located on the south boundary of the Town of Vail, the Federal parcel is also within the designated Vail Ski Area.

West Lake Creek Land Exchange

The West Lake Creek Exchange is a proposed assembled exchange involving S. Robert Levine (the non-federal party or Levine) and the Forest Service. The non-federal party is proposing to

convey three parcels of non-federal land, totaling 303.5 acres to the Forest Service in exchange for two parcels of NFS land totaling 128.7 acres. All of the exchange parcels are located within the White River National Forest, in Eagle and Pitkin counties, on the Holy Cross and Aspen Ranger Districts. These lands are described below. Because the non-federal party (after consultation with the White River National Forest Supervisor and other Forest Service officials) cooperated with the Aspen Valley Land Trust (AVLT) in the acquisition of the non-federal parcel known as the Independence Town Site for inclusion in this exchange, processing as an assembled land exchange in accordance with Forest Service Handbook 5409.13, Chapter 30, Section 32.41 is appropriate.

The selected Federal lands consist of two parcels, (Parcels 1 and 2) totaling approximately 128.7 acres within the White River National Forest in Eagle County, Colorado (Exhibits 1-3 in the BA). Each parcel is described below, and in detail within the BA, and are located as follows:

Parcel 1, the West Lake Creek parcel, consists of 118.65 acres. It is located in section 30, lots 5, 6, 7, N½ N½ lot 3, N½ N½ NE¼/ SW¼; N½ N½ W½ NW¼ SE¼, T. 5 S., R. 82 W., 6th Principal Meridian, Eagle County, Colorado. It is approximately four miles south of Edwards, up the West Lake Creek Road, and with the exception of 1,350 feet of property line that is contiguous with Parcel 2, is completely surrounded by private land primarily owned by the non-federal party.

Parcel 2, the Casteel Creek parcel, consists of 10.05 acres. It is located in section 30, lot 10, T. 5 S., R. 82 W., 6th Principal Meridian, Eagle County, Colorado. It is approximately four miles south of Edwards, up the West Lake Creek Road and is contiguous with the western tip of the West Lake Creek Federal Parcel. It is surrounded by NFS land on the east, south, and west and is contiguous with Parcel 1 on the north (Exhibits 2 and 3 in the BA). This parcel was added to the proposed land exchange in 2003, otherwise it would have been considered part of Parcel 1. The transfer of this parcel would balance values among exchange parcels. Following the exchange, the non-federal party would extend the conservation easement covering Parcel 1 to include this parcel. No development would occur on Parcel 2.

The selected non-federal lands consist of three parcels, (Parcels A, B, and C) totaling approximately 303.5 acres within the White River National Forest in Eagle and Pitkin counties, Colorado. Each parcel is described below.

Parcel A, also referred to as the "Card Creek" parcel, consists of 124.3 acres with all mineral rights. It is located in section 31, SW¼ NE ¼, NW¼ SE¼ NW¼, T. 5 S., R. 82 W., 6th Principal Meridian, Eagle County, Colorado. It lies within the White River National Forest close to the Holy Cross Wilderness boundary (Exhibits 1-3 in the BA). The parcel straddles the Baryeta Cabins Road and is located approximately 0.75 miles south (i.e., up Forest Service Road 432) of the selected Federal parcel (Parcel 1), mostly in Card Creek, a West Lake Creek tributary.

Parcel B is composed of three mining claims totaling approximately 30.993 acres with mineral rights and collectively known as the Pitkin Creek Mining Claims. They are located in section 18, a portion of the SW¼ (Cascade Lode), section 19, a portion of the W½ (Silver King Lode), section 18, a portion of the SW¼, section 19, a portion of the NW¼ (Eliza Bolt Lode), U.S. Mineral Survey No. 2363, T. 4 S., R. 79 W., 6th Principal Meridian, Eagle County, Colorado. They are located just east of Pitkin Lake within the Eagles Nest Wilderness (Exhibits 4 and 5 in BA), about four miles north of I-70's East Vail exit.

Parcel C is composed of the Independence Town Site and patented mining claims and mill sites totaling approximately 148.216 acres. They are located in sections 6 and 7 (patented mining claims and mill sites as described below), T. 11 S., R. 82 W., 6th Principal Meridian, and. sections 1, 2, 11, and 12 (patented mining claims and mill sites within the Independence Mining District as described below), T. 11 S., R. 83 W., 6th Principal Meridian, Pitkin County, Colorado. The parcels are located two miles due west of Independence Pass and straddle Highway 82, the Roaring Fork River, and the narrow, non-wilderness corridor between the Collegiate Peaks Wilderness to the south and the Hunter Fryingpan Wilderness to the north (Exhibit 6 of the BA).

Patented Claims:

Mineral Survey Number	Claim Name	District
USMS No. 1235	Geld Placer	Independence
USMS No. 1882-A	Golden Champion Lode	Independence
USMS No. 1881-A	Mount Hope Lode	Independence
USMS No. 1423	Dolly Varden Lode	Independence
USMS No. 1422	Gatton Lode	Independence
USMS No. 1754	Climax Lode	Independence
USMS No. 1307	Legal Tender Lode	Independence
USMS No. 1344	Minnie Lode	Independence
USMS No. 1318	Last Dollar Lode	Independence
USMS No. 1421	Independence Lode	Independence
USMS No. 2038	Little Tillie Lode	Independence

Totaling 148.216 acres, more or less. These patented mining claims are proposed for conveyance to the United States without mineral or development rights. The mineral rights were acquired by Pitkin County, subject to a non-development deed restriction, in conjunction with AVLT's acquisition of the parcel. The Loughran Family and Central Trust retained the surface development rights, which are transferable in Pitkin County, for use elsewhere within Pitkin County.

Woods Lake Hydroelectric Project

The Forest Service proposes to re-issue a special use permit, associated with Federal Energy Regulation Commission (FERC) re-licensing the existing minor, water power plant on Lime Creek, for Woods Lake Hydro Company. Portions of the dam and reservoir are located on land

owned by Woods Lake Hydro Company, and the remainder of the power plant infrastructure, are within the right-of-way granted by the special use permit issued by the Forest Service. The proposed action is located on the Sopris Ranger District of the White River National Forest, which includes approximately 11 acres of NFS lands.

Woods Lake is accessible for a limited time during the year, late spring through early fall, as determined by the spring thaw and onset of winter at an elevation of approximately 9,300 feet. The hydroelectric plant is operated 152 to 165 days per year, mid-May to mid-October. In addition to annual seasons, use of the power plant may be limited by the quantity of water to be maintained in Lime Creek.

District Ranger Bill Westbrook, Sopris Ranger District, White River Nation Forest submitted additional information for this project. As part of the proposed action, the Forest Service has committed to implement the minimization measures, presented in the BA, to reduce the likelihood of take to bald eagles. The Forest Service will require the installation of state-of-the-art protective devices or designs to each perchable power pole along the transmission line to reduce risk of electrocution to bald eagles (B. Westbrook, USFS, pers. comm.), therefore, the Service concurs with the "may affect, not likely to adversely affect" determination for the bald eagle.

Missionary Ridge Burned Area Timber Salvage Project

The Missionary Ridge Fire (MRF) was located on the Columbine Ranger District of the San Juan National Forest, and started on June 9, 2002, and was 100 percent contained July 17, 2002. The burn area of this fire is estimated to be over 70,000 acres. The Forest Service proposes to salvage-harvest timber from 4,132 acres of the burned area.

The proposed action is to salvage as much timber as possible using existing roads. Dead and dying conifer trees (10.0 inches in diameter and greater) and aspen trees (5.0 inches in diameter and greater) will be removed from designated harvest areas. Additionally, widely scattered individual trees and small clumps of trees that are killed by bark beetles, or die (or likely to die) from fire damage during the harvest operation will be felled and removed within the overall matrix of the sale area. Any tree that poses a safety hazard to personnel or property associated with the logging operation will be felled.

Canada lynx habitat assessment predicted that certain forest cover types observed in the LANDSAT image, and within harvest units, continue to provide lynx habitat. Such cover types generally exist within the burn perimeter as scattered patches within and on the periphery of harvest units. In these areas, severely damaged trees are still likely to appear in a LANDSAT image as live trees, but will actually be either dead or predicted to be dead by the time the sale commences in 2003. Trees that were killed or fatally damaged by the fire (displaying more than 66 percent crown scorch) will be targeted for harvest. Live, vigorous, healthy trees within harvest units will not be cut.

Newly constructed temporary roads (3.5 miles) proposed, would be for logging traffic only; public use or access would not be allowed, including winter use activities. The newly constructed 3.5 miles of temporary road would affect portions of suitable lynx habitat (denning, winter foraging, and other habitat). Following timber harvest operations, these temporary roads would be closed and reclaimed according to Forest Service standards.

Although winter logging has not been proposed, it has not been excluded under any alternative. If winter logging does occur, Missionary Ridge Road, Forest Development Road 682, and associated access roads would be plowed. Plowing of the main road would not contribute further to potential competitive interaction between lynx and other predators, since the road is already compacted each winter by snowmobiles. Under normal conditions, plowing of the access roads would constitute an increase in snow compaction. However, the remaining suitable lynx habitat within this area is so small that it is unable to support lynx. Once timber harvest is completed, access roads will be closed (via gate, sign, or other barriers) and obliterated to Forest Service standards.

Approximately 22.7 miles of the existing forest roads proposed under Alternative 4 would need little or no maintenance for timber salvage operations. An estimated 55 miles of the existing forest roads would need some type of pre-haul maintenance or reconstruction to make them suitable for log haul. The 55 miles of roads needing pre-haul maintenance or reconstruction are primarily roads that are currently closed to the public. These roads resulted from past timber harvest, and have been closed via gates, signs, or barriers such as logs or boulders. As such, they are closed to motorized use during spring, summer, and fall. Current travel management as outlined in the forest visitor map lists most of the Missionary Ridge area as open to snowmobile use during winter including the approximate 55 miles of roads needing pre-haul maintenance or reconstruction.

Prior to the MRF, the San Juan National Forest recently completed the mapping of roads, trails, and other areas receiving snow compaction via motorized and non-motorized winter use on the San Juan National Forest. Current mapping effort shows that the 22.7 miles of existing roads need little or no maintenance for timber salvage. These roads are currently mapped as receiving motorized and non-motorized winter use. Missionary Ridge Road (FDR 682) is considered a designated motorized route that receives snowmobile use during winter. Approximately 75 percent of the total length of the Missionary Ridge Road receives grooming (to Camp Creek). The remaining 25 percent of the road remains ungroomed (from Camp Creek to Tank Creek). The Lime Mesa Road (FDR 081) is also a designated motorized route that receives grooming. The Lime Mesa Trail (# 676), which loops and connects to the Burnt Timber Road (FDR 595) also receives motorized use, but is not groomed. The Burnt Timber Road (FDR 595) is also a designated groomed route. The Red Rim Road (FDR 076) also receives snowmobile use, but does not receive grooming.

Water Depletions: The proposed Missionary Ridge Burned Area Timber Salvage project is located in T. 36 N., R. 9 W., section 15, La Plata County, Colorado. The proposed action will cause a one-time depletion of 14.5 acre-feet to the San Juan River.

A Recovery Implementation Program for Endangered Fish Species in the San Juan River Basin was initiated in October 1992. The Recovery Program was intended to be the reasonable and prudent alternative to avoid jeopardy to the endangered fishes by depletions from the San Juan River.

On May 21, 1999, the Service issued a biological opinion determining that depletions of 100 acre-feet or less would not limit the provision of flows identified for the recovery of the Colorado pike minnow and razorback sucker and, thus, not be likely to jeopardize the endangered fish species or result in the destruction or adverse modifications of their critical habitat.

The Forest Service should condition its approval documents to retain jurisdiction in the event that the Recovery Program is unable to implement the flows identified for recovery in a timely manner. In that case, as long as the lead Federal Agency has discretionary authority over the project, reinitiation of section 7 consultation may be required.

At this time we have had no response to our "30 day San Juan River water depletion letter" notifying the effected tribes of this water depletion.

Millswitch Vegetation Management Project

The Millswitch Vegetation Management Project will encompass 1,425 acres of lodgepole pine and Engelmann spruce and *Abies lasiocarpa* (subalpine fir). Other elements of this project include pre-commercial and commercial thinning, and the physical closure or obliteration of 5.98 miles of existing roads. Associated with the timber harvest, are proposed specified and temporary road constructions, slash disposal activities, site preparation treatments, and post sale treatments. New specified road construction will total 1.63 miles. All temporary roads and the .5 miles of specified new road will be obliterated upon project completion. The remaining 1.13 miles of specified road will be physically closed. Physical closure consists of gates, boulders, logs, slash and other debris to mask the roadbed and discourage use. Additionally, 5.98 miles of Forest Service roads are proposed for obliteration while an additional 2.27 miles of Forest Service roads will be closed to full size vehicles and ATVs.

The proposed activities include a combination of even age and uneven age treatments. Even age treatments would be applied to lodgepole pine sites while, uneven age treatments to spruce-fir sites. Group selection harvesting will remove 25 percent of the stand in groups averaging ¼ acre in size. This treatment is prescribed on sites dominated by Engelmann spruce and subalpine fir. Where infestation of dwarf mistletoe is severe, or lodgepole pine stands are considered decadent, clear-cutting or patch clear-cutting will be prescribed to regenerate the stand. The stand proposed for shelterwood harvest is dominated by lodgepole pine. A minor amount of spruce and aspen are present on the site. The treatment would remove trees in small groups or individually.

Commercial thinning and pre-commercial thinning would primarily remove inferior trees from mid or lower canopy levels. Understory trees with crowns near the average snow depth will be left to maintain foraging habitat for snowshoe hare. The canopy will be opened to reduce competition, accelerate growth, promote crown development and increase diameter on individual trees. The final aspect of the commercial and pre-commercial treatments will be meadow edge restoration where spruce and lodgepole pine stands have encroached. Pre-commercial thinning within Unit 10 was part of the original proposed action, however pre-commercial thinning within Unit 10 may result in adverse effects to lynx, and was therefore withdrawn from the proposed action (Michael Jackson, USFS, *in litt*.).

Snowshoe and Ruby Grazing Allotment Permit Renewals

The proposed action, located on the Paonia Ranger District, Grand Mesa, Uncompahgre and Gunnison National Forests, would renew existing livestock grazing permits on the Snowshoe and Ruby allotments. The Snowshoe allotment is permitted for 550 cow/calf pairs and 5 horses. The grazing season will be from June 24 to October 15. The Ruby allotment is permitted for 1,840 ewe/lamb pairs consisting of two bands of 920 each. The grazing season for the Ruby allotment will be from July 1 to September 20. The broader grazing season for cattle is to provide flexibility in planning and includes the opportunity to use livestock as a management tool to treat mulesear and oakbrush. In the Snowshoe Mesa allotment, livestock would be grazed (5 – 10 days) on the mulesear before it blossoms.

The District plans to meet LCAS standards by managing livestock grazing by adjusting timing and duration within each pasture to avoid grazing on regenerating vegetation, grazing the same area during the same time every year, and grazing an area only once during the grazing season. Pastures will be cleaned of livestock within five days of agreed date for leaving the pasture. Grazing systems will result in forage plants being grazed during one use period each year (one herd and one pasture at a time). Rotation from one pasture to the next would be based on proper use. Upland plants would not sustain more than 50 percent use. Range analysis will be conducted to determine whether project objectives and LCAS standards are being achieved.

Although the Forest Service has determined that these grazing allotments "may affect, but are not likely to adversely affect" bald eagle, this is an inappropriate determination. Based on the Summary of Mitigation and Monitoring Requirements for Programmatic Review of Grazing Allotments (1995), only those allotments that occur in the prairie-grassland ecosystems "may affect" bald eagle. Since prairie-grassland habitats do not occur on the Forest, the appropriate determination of affects to bald eagle resulting from these grazing allotments is "no effect".

Galloping Goose Trail

The Norwood Ranger District proposes to construct .5 miles of single track, non-motorized trail between the Highway 145 trail-tunnel near Ophir Loop south to Priest Lake Road (Forest Service Road 626). The trail will be 24 inches wide with an average slope gradient of less than 5 percent. Trail use will only be allowed during the summer and fall seasons. Motorized use will

be prohibited. Non-motorized use will include mountain biking, hiking and horseback riding. Construction will begin no earlier then May 1, 2003, and be completed by November 15, 2003.

A component of the trail will be the construction of two bridges. The two prefabricated bridges will be flown in by helicopter or packed in with all terrain vehicles. The bridges are 20-30 feet in length and will span two gullies along the trail corridor. Concrete abutments for each bridge and two stone retaining walls will also be constructed.

The Nature Conservancy's Small Tracts Acquisitions

The Nature Conservancy is petitioning the Forest Service under the Small Tracts Act to acquire a small parcel of Uncompahgre National Forest land in Illium Valley near the South Fork San Miguel River. The parcel of Forest Service land totals about 0.73 acres and consists of two long and narrow wedges varying from 0-20 feet in width between two privately owned parcels: the Poctolus Placer (owned by The Nature Conservancy) and the Golden Wedge Placer (owned by another private party). The Forest Service parcel is isolated from other National Forest lands, apparently the result of an imprecise boundary survey in 1902 when the Golden Wedge Placer was first patented. The Golden Wedge and Poctolus placers were apparently intended to have a common boundary, but survey inaccuracies resulted in narrow wedges of public land between much larger private parcels.

The Nature Conservancy proposes to acquire the Forest Service land in order to facilitate a boundary adjustment between the Nature Conservancy's South Fork Preserve and an adjacent private landowner. The boundary adjustment will involve approximately 1 acre of land (not part of the current Forest Service tract), and will facilitate home site access from a county road and the construction of one residence on land adjacent to the current Forest Service tract.

James Lucas Small Tracts Act/Land Interchange Project

The objective for the proposed James Lucas Small Tracts Act/Land Interchange project is to resolve a cabin encroachment situation on National Forest land. A recent Bureau of Land Management survey revealed that a cabin built in the 1880s (and added onto in the 1930s), and now owned by Mr. James Lucas, is partially located on National Forest land. This project proposes to sell or exchange the National Forest parcel to James Lucas. The National Forest parcel would extend across a portion of Mill Creek (a tributary of Clear Creek) to connect with an adjacent private property line, so as not to leave an unmanageable sliver of National Forest land between two private landowners. Land surveys have calculated that 0.71 acres would be sold or exchanged. This acreage includes approximately 50 feet of Mill Creek.

The National Forest parcel is located in T. 3 S., R. 74 W., in the SE ¼ of the SW ¼ of section 13, Clear Creek County, on the Clear Creek Ranger District of the Arapaho National Forest. The parcel is 8,800 feet in elevation. Forest vegetation is a mixture of mostly mature spruce, subalpine fir, lodgepole pine, and aspen on a southwest-facing slope. Mill Creek runs southeast through the National Forest parcel. The parcel is located within the Yankee Hill Geographic Area (described in the Forest Plan), which is 27,033 acres of NFS land mixed with 8,618 acres of private land.

Sheep Creek II Vegetation Management Project

The purpose of this project is to address the management opportunities for moving the Sheep Creek Geographic Area towards the desired conditions identified in the Forest Plan and Landscape analysis (LA). The Canyon Lakes Ranger District of the Arapaho and Roosevelt National Forests is proposing vegetative treatments on approximately 7,508 acres of NFS land in response to the purpose and need for action. This alternative would utilize a variety of silvicultural, prescribed fire, and access activities.

The Sheep Creek II Project is located in the Sheep Creek Geographic Area of the Canyon Lakes Ranger District in the extreme northwest corner of the Arapaho and Roosevelt National Forests, Larimer County, Colorado. The project area can be located at T. 11 N., R. 73 W., sections 15-23, 26-34; T. 11 W., R. 74 W., sections 2-30, and 36; T. 11 N., R. 75 W., sections 13, 14, 23, 25 and 26. The project area elevations range from 7,500 to 9,940 feet.

Silvicultural activities would include approximately 892 acres of timber harvest in units along the Pearl Beaver Road and two units on the Acme Creek Road just off County Road 80C. Tables 1-5 in the BA describe the location, habitat type and acres of treatment for each proposed activity in the various lynx habitat types. Screening buffers would be used in units along the Pearl Beaver Road to limit unauthorized off-road access. Other units in the Acme Creek area and northwest of the Crystal Lakes Subdivision would utilize various silvicultural treatments (described in tables 1-5) on about 1,234 acres for a defensible fuel profile around private land boundaries to create a more easily defensible area in the event of a wildfire. Slash from silvicultural activities would be chipped, piled or broadcast burned, or disposed of through administrative permits.

Prescribed fire activities include primary and secondary burn (Pb and Pb2 respectively) areas on approximately 5,382 acres in Unit 68 to create defensible wildfire areas and enhance forest health and wildlife opportunities. Primary burn areas (approx. 2,039 acres) are intended to receive prescribed fire treatment. Secondary burn areas (approx. 3,343 acres) are buffers not intended to receive prescribed fire, but are analyzed for control purposes. No primary burn areas occur in lynx denning habitat and 44 acres occurs within the secondary burn area (Pb2). Should the burn progress into the secondary burn area, it is not intended or expected that denning habitat would be removed with the proposed intensity and area (approximately 20 percent) of the burns.

Access to timber harvest units along the Pearl Beaver Road and lower portion of the Acme Creek Road may include approximately 6 miles of road maintenance and temporary road construction, two stream crossing improvements, and permission from a local landowner for administrative access. If private access is denied, an alternative temporary road would be constructed on National Forest System land. Private land access would only be for the life of the project and any temporary road would be obliterated after use. Non-system roads identified in the project roadless area would be obliterated or closed for access. The Acme Creek Road would be left open for administrative and recreation access. Erosion control measures would be implemented on the Acme Creek Road for resource damage during the life of the project.

Treatments within Denning Habitat

Unit #	Proposed Treatment*	Total Unit Acres	Dominant Tree Species**	Acres Denning Habitat Treated
1	OGE	18	3c Lodgepole pine (lpp)	3
2	CC	87	3b lpp	11
3	CCR	119	3a/b lpp	16
4	OR	23	3a lpp	1
5	OR	35	3a lpp	2
6	CC	68	4b lpp	11
7	CC	34	3/4b lpp	1
35	CCP	77	4b lpp	3
37	CC	31	4b lpp	1
68	Pb2*	2823	4a lpp	44 potential
Total				93 acres

Treatments within Winter Forage Habitat

Unit #	Proposed Treatment*	Total Unit Acres	Dominant Tree Species**	Acres Forage Habitat Treated
1	OGE	18	3c lpp	14
2	CC	87	3b lpp	75
3	CCR	119	3a/b lpp	92
4	OR	23	3a lpp	16
5	OR	35	3a lpp	23
6	CC	68	4b lpp	48
7	CC	34	3/4b lpp	34
8	CC	41	3b lpp	40
9	CCP	98	3c lpp	73
28	CC	66	3b lpp	1
35	CCP	77	4b lpp	1
37	CC	31	4b lpp	8
68	Pb2	2823	4a lpp	177 potential
Total				603 acres

Treatments within "Other" Habitat

Unit #	Proposed Treatment*	Total Unit Acres	Dominant Tree Species**	Acres Other Habitat Treated
3	CCR	119	3a/b lpp	2
5	OR	35	3a lpp	1
6	CC	68	4b lpp	8
Total				11 acres

Treatments within Unsuitable Habitat

Unit #	Proposed Treatment*	Total Unit Acres	Dominant Tree Species**	Acres Unsuitable Habitat Treated
1	OGE	18	3c lpp	1
2	CC	87	3b lpp	1
3	CCR	119	3a/b lpp	9
4	OR	23	3a lpp	7
5	OR	35	3a lpp	10
6	CC	68	4b lpp	1
68	Pb2	2823	4a lpp	81 potential
Total				110 acres

Treatments within "Non-habitat"

Unit #	Proposed Treatment*	Total Unit Acres	Dominant Tree Species**	Acres Non-habitat Treated
3	CCR	119	3a/b lpp	1
68	Pb2	2823	4a lpp	26 potential
Total				27 acres

*OGE – Old Growth Enhancement (mechanical removal of understory in old growth)
*CC – Clear Cut
*CCR – Clear Cut with Reserves of llp for foraging habitat
*OR – Overstory Removal
*CCP – Clear Cut with Patches of lpp to create future interior forests
*Pb – Prescribed burn
*Pb2 – Secondary Prescribed burn

**Condition Class Codes
3a-Sapling pole, Scattered Crown Closure (10-39 percent crown closure)
3b-Sapling pole, Medium Crown Closure (40-69 percent crown closure)
3c-Sapling pole, Dense Crown Closure (70 percent and above)
4a-Mature, Scattered Crown Closure
4b-Mature, Medium Crown Closure
4c-Mature, Dense crown Closure

La Manga Beetle Salvage Sale

The proposed project is located in T. 33 N., R. 5 E., in all or parts of sections 20, 21, and 28. The elevation of the project area ranges from approximately 10,400 to 11,200 feet.

The purpose of the project is to salvage trees killed and currently infested by spruce beetles (*Dendroctonus rufipennis*) along Forest Roads 114, 114.1C, 114.2A, 114.2B, and 114.2C in the Rio Grande National Forest, and adjacent skid trails through a commercial sawlog and/or commercial firewood sale. This project includes removal of trees that have been killed by the spruce beetle (both standing and blown down trees), trees that are currently infested but not yet dead, and trees that may be infested during harvest operations. The intent is to prevent a potential build-up of spruce beetles in down Engelmann spruce. Current unit boundaries encompass about 135 acres. However, because there is the potential for more Engelmann spruce being killed by spruce beetle, this opinion will consider the effects of a salvage sale up to 300 million board feet over an area approximately 500-550 acres. Project activities would occur 25 June through 15 October, starting in 2003 and potentially operating through 2007. The project area would contain denning, winter, and other lynx habitat within the Rito-Archuleta and Victoria-Chama LAUs, through the removal of trees that have been killed by the spruce beetle (both standing and blown down trees), trees that are currently infested but not yet dead, and trees that may be infested during harvest operations.

The Rio Grande National Forest further proposes the following activities to minimize the impacts to the lynx: 1) additional trees marked in 2003 or later will only be those actively infected at the time, and if these trees are found to be free of beetles at the time of harvest, they will not be removed. If harvest begins to approach the upper limit covered in this analysis (300 million board feet over 550 acres), biologists will be consulted with immediately; 2) leave as much woody debris on the forest floor as possible. Meet or exceed Forest Plan Standards and Guidelines (LRMP III-10, Standard 2, Guidelines 1 and 2); and 3) retain at a minimum, 2-3 of the largest snags available per acre.

Buffalo Pass Campground-Tres Cabras Timber Sale

The Buffalo Pass Sanitation sale, on the Rio Grande National Forest, is an effort to control Mountain Pine Beetle, Douglas Fir Beetle, and mistletoe infestations, which have occurred over the past three years. Additionally, the area has also recently been through a large-scale Western Spruce Budworm outbreak. The sale area consists of 3 cut units totaling 164 acres of mixed conifer. Cut Units 1 and 2 are 110 acres and 21 acres respectively, which surround the Buffalo Pass Campground on three sides. Cut Unit 3 or the Tres Cabras Unit is 33 acres in size and approximately 2/3 of a mile northeast of Units 1 and 2 (see table).

Specific Sale name and Description

Sale Name	Location	Description
Buffalo Pass Campground	T. 45 N., R. 4 E., sections 3,	This unit is currently classified as 95 acres of winter foraging and 11 acres of non-lynx habit and is expected to produce

Sale Name	Location	Description
Unit 1	4, 33, and 34	approximately 122 million board feet. An on-site inspection of unit 1 revealed that the winter forage area is actually far more than 10 percent pine and should be reclassified as non-habitat.
Buffalo Pass Campground Unit 2	T. 45 N., R. 4 E., section 2	This unit is currently classified as 24 acres of unsuitable habitat and is expected to produce approximately 24 million board feet. An on-site inspection of unit 2 revealed that the re-growth, which has occurred since the last shelter-wood cut, now meets the criteria for other lynx habitat.
Tres Cabras Unit 3	T. 46 N., R. 4 E., sections 23and 26	This unit is 34 acres in size and is expected to produce approximately 36 million board feet. Unit 3 is currently classified as 28 acres of winter foraging habitat and 6 acres of non-habitat. An on-site inspection of Unit 3 revealed that the winter forage area is actually far more than 10 percent pine and should be reclassified as non-habitat and the 6 acres of non-lynx habitat meets winter foraging habitat criteria.

Harvesting is anticipated to begin the winter of 2003 and end in late spring of the following year. One temporary road will be constructed for the projects timber removal. It will extend through most of Unit 2 into Unit 1. The temporary road will not be hardened nor require much excavation but will require tree removal for access. Following logging activities, it will be rehabilitated with an anticipated closure in late spring. All other roads needed for project logging operations currently exist. The two track around Unit 3 is not planned for upgrading. However, it will receive rehabilitation if truck damage occurs during harvesting operations. Tree species to be harvested will include ponderosa pine, Douglas fir, blue spruce and lodgepole pine.

The drainage in which the project area resides has a very small remaining aspen component due to extensive conifer succession. In an effort to increase species diversity and given this opportunity to reverse some of the succession occurring, the logging contract will require the removal of any marketable conifers that are found within a 30 feet perimeter of remaining clones to promote aspen regeneration. These tree removals may or may not be beetle infected trees but have been covered in the analysis for this project.

The project will be administered under a small sales contract. A limited amount of post harvest tree removal is expected to follow logging operations as additional infected trees appear. These trees will be cut and piled by Forest Service personnel later in the summer of 2003 and 2004. Burning of post harvest infected tree logs are planned for the winter of 2003 and 2004.

If the project is implemented during the winter as planned, additional snow compaction is expected to occur within the Buffalo Pass Campground area and on the new temporary logging road, which is normally closed for the winter. While this area has not, in recent years, received sufficient snow depths and the powdery conditions to give lynx a competitive foraging advantage, such conditions could possibly occur within the project's timeframes.

The Rio Grande National Forest further proposes the following activities to lessen the impacts to the lynx and any other listed species:

Report sighting of any threatened or endangered species, within the project vicinity, to the district biologist as soon as possible.

Retain as much large (12 inches plus) down woody material as possible while meeting the Standard minimum of 2 large down logs per acre.

Closure of the Benny Canyon road, directly south of the campground area, during winter activities so that there will be no net increase of snow compaction.

Report the sighting of any lynx in the project vicinity to the district biologist.

Spruce Hole Blowdown Small Sale

The proposed project is located at Latitude 37 degrees 05' 17.9" N and Longitude 106 degrees 21' 16.0" W. The elevation of the project area ranges from approximately 10,400 to 10,700 feet.

The purpose of the project is to salvage trees killed and currently infested by spruce beetles along Forest Roads 108.1B, 108.1C in the Rio Grande National Forest, and adjacent skid trails through a commercial sawlog and/or commercial firewood sale. This project includes removal of trees that have been killed by the spruce beetle (both standing and blown down trees), trees that are currently infested but not yet dead, and trees that may be infested during harvest operations. The intent is to prevent a potential build-up of spruce beetles in down Engelmann spruce. Estimated volume is approximately 270-400 million board feet and will encompass 75 acres. However, because there is the potential for more Engelmann spruce being killed by spruce beetle, this opinion will consider the effects of a salvage sale up to 400 million board feet over an area approximately 665 acres. The project area would contain denning, winter, and other lynx habitat within the Rito-Archuleta and Victoria-Chama LAUs.

The Rio Grande National Forest further proposes the following activities to lessen the impacts to the lynx:

1) Additional trees marked in 2003 or later will only be those actively infected at the time, and if these trees are found to be free of beetles at the time of harvest, they will not be removed.

2) Leave as much woody debris on the forest floor as possible.

3) Retain at a minimum, 2-3 of the largest snags available per acre.

Outfitter and Guide Special Use Permit Renewal

The Rio Grande National Forest proposes to issue 10 new outfitter and guide permits. Activities associated with each permit predominately occur on existing National Forest, other public or

private facilities such as Forest road systems, parking areas, Forest trail systems, trailheads, and designated dispersed camp sites. Each permit has designated uses and existing terms and conditions regarding natural resource protection and public safety. All permits affect NFS lands generally above 7,800 feet to below 14,000 feet in elevation. Specific duration of activities associated with spring–fall permits occur during spring (May-Memorial Day) through fall (September-Labor Day) through November, and include overnight backpacking, overnight camping/fishing (horse, llama), progressive backpacking (horse, llama), stock day trips, day-use fishing rides, 4-wheel drive tours (jeep/ATV/motorbikes), river rafting, cattle drives, mountain biking, fall hunting (archery/muzzleloader/rifle), bear hunts, pack-in spike camps, and pack out big game. Some summer activities may overlap into October and the earliest hunting season (archery) starts in mid-August. Specific duration of activities associated with winter permits occur during December through March and include mountain lion hunting, Nordic skiing (cross-country), snowmobiling, snowcat operations, overnight hut trips, winter mountaineering, and an annual race event (cross-country). Typical day-activities range between 9:00 a.m. and 8:00 p.m. Overnight camping activities are assumed to be confined to campsites between 9:00 p.m. and 7:00 a.m.

The term of each permit is 5 years with service days categorized as priority service days (scheduled) and temporary service days.

A total of 20,654 service days will be allocated forest-wide during the summer season. This represents an increase of 5,140 service days or 33.1 percent over current levels. In the fall, 5,607 service days will be allocated. This is an increase of 585 service days, or 11.6 percent. A total of 4,335 service days will be allocated for winter activities. This is an increase of 37.6 percent over the current use level.

The proposed action is located across the Rio Grande National Forest, which includes approximately 1,852,000 acres of National Forest System lands and potentially affects 18 LAUs. These NFS lands are located in T. 25 S. through T. 29 S.; R. 72 W. and 73 W., 6th Principal Meridian; Alamosa, Costilla and Saguache, Colorado; and T. 48 N. through T. 32 N.; R. 12 E. through R. 6 W., New Mexico Principal Meridians; Alamosa, Conejos, Costilla, Mineral, Rio Grande, Saguache, Hinsdale, Custer, San Juan and Archuleta Counties, Colorado.

Aspen Ridge Road Easement and Plowing Authorization

Within the Routt National Forest, Yampa Ranger District, an existing road easement provides access to private inholdings. An associated Reciprocal Agreement is part of the agreement between private landowners and Forest Service. The proposed action is twofold: 1) The transfer of the road easement from one private entity to another and 2) Granting year round access allowing snowplowing/grooming on Forest Service roads. A layer of snow will be left on plowed roads for winter recreation use. Access is from State Highway 134 along Forest Road 212 to private land (approximately 3.1 miles of Forest Road 212) in Grand County, Colorado. The project is located at T. 1 N., R. 82 W., sections 9, 16, 21, 22, and 27.

Box Creek Watershed Restoration Project

The Pike and San Isabel National Forest Leadville Ranger District in conjunction with the Bureau of Land Management Royal Gorge Field Office proposes a vegetation restoration and road closure project in the Box Creek watershed located in Lake County, approximately eight miles southwest of Leadville, Colorado. The 6th level 18,642-acre watershed ranges in elevation from 9,000 feet along the Arkansas River to over 14,000 feet at the top of Mt. Elbert. The combined Federal agencies manage 59 percent of the watershed's resources with the remainder being State (5 percent) and private (36 percent). The project resides within the southern portion of the 260,000-acre Tennessee Pass LAU (BA, Figure 1). The lead Federal agency for the project is the Pike San Isabel National Forest. The Service concurs with the determination that the proposed action "may affect, not likely to adversely affect" the bald eagle.

Vegetation Treatments: The objectives are to restore vegetation structure and composition; change current successional trends; modify insect and disease conditions and reduce risk of uncharacteristic response of vegetation to natural disturbances of fire, insect, and disease. Objectives would be achieved through regeneration harvesting techniques (seed-tree/shelterwood) and mixed severity fire treatments on 6,987 acres. Treatment design will incorporate natural mosaic patterns and will place or retain lynx foraging habitat adjacent to denning habitat where possible. Pre-commercial thinning in lynx habitat follows LCAS standards to occur only in dense mature lodgepole having elevated crowns less than 50 percent crown ratios, exhibit self-pruning characteristics and lack understory vegetation. Overstory cover around system routes will be thinned no more than 40 feet with a 200-foot no-treatment buffer zone adjacent to treatment areas.
Within the project's montane zone, large patches of lodgepole pine overstory will be removed and low intensity burns will be applied for regeneration of lodgepole and aspen. Mature spruce-fir/aspen forests are to be retained for sustaining alternate lynx prey species populations.

Aerial photography of the project area reveals past fire events in the subalpine zone. A prescribed stand replacement burn of 1,540 acres is planned to mimic the historical disturbance in generating new aspen and spruce fir between the montane and subalpine zones. The treatment will utilize hand construction fire lines and natural features to control fire size.

Treatments proposed for the Box Creek Watershed Project.

ID#	Prescription Descriptions on Federal Lands	Acres Treated[1]
3	Maintain existing regenerated clear cuts. Continue dwarf mistletoe evaluations and maintenance to Desired Future Condition (DFC) is a mixed conifer stand.	582 M
4	Thin pre-commercial overstocked lodgepole pine stands. DFC is mixed conifer stands.	334 M
7	Sanitize and thin overstocked lodgepole pine with dwarf mistletoe rating less than 2. DFC is thinned lodgepole pine stands with reduced dwarf mistletoe populations.	61 M[2]

ID#	Prescription Descriptions on Federal Lands	Acres Treated[1]
8	Regenerate lodgepole pine and aspen where the lodgepole pine is heavily infested with dwarf mistletoe. DFC is early seral aspen communities.	57 B 110 M[2]
10	Regenerate lodgepole pine highly infested with dwarf mistletoe. Create a dwarf mistletoe buffer. DFC is clean regeneration stands with snag and CWD creation.	77 B 317 M[2]
11	Understory removal of lodgepole pine where ponderosa pine is dominant overstory. DFC is late seral open ponderosa pine stands.	199 B 368 M[2]
12	Reduce the basal area of lodgepole pine infested with dwarf mistletoe. DFC is open lodgepole pine stands with an understory of grass and wildlife forage.	477 B 1,026 M[2]
13	Mixed severity fires in lodgepole pine stand infested with dwarf mistletoe. DFC is burned snag patches greater than 100 acres in size.	192 M
14	Reduce lodgepole pine basal areas in mixed conifer stands. DFC is big game winter range security.	142 M[2]
19	Patch replacement burns in mixed conifer and aspen stands. DFC is historic burn patterns in Engelmann spruce and subalpine fir with early seral aspen stands.	1,540 B
21	Regenerate grasses and sagebrush by burning to DFC, which is an early seral open population.	1,349 B
23	Thin ponderosa pine stands in urban interface zones to form a green fuel break. DFC is thinned ponderosa pine with defensible boundary.	156 M[2]
	Subtotal treated acres	6,987
	No treatment acres	11,655
	Total Acres	18,642

[1] M = Mechanical treatment; B = prescribed fire treatment
[2] Includes a prescribed understory fire following mechanical treatment

Roads: The objective is the, rehabilitation and closure of non-system routes in critical wildlife habitat and in areas where present sub-standard road conditions are causing resource damage and fractured habitats. Non-system road closures would involve decommissioning and restoring the road to its natural state. Seasonal changes in motorized use by gating roads during off seasons and limit on motorized use behind closures.

Motorized changes in the Box Creek Watershed between current and proposed action.

Current Status	Current Type	Proposed Type	Miles
System	Open all year	Open summer/fall only[1]	5.50
		Open summer/fall only[2]	2.05
		Open all year	7.20
		Decommissioned	4.44
	Gated all year	Gated all year	7.04
Non-system	Open all year	Gated all year	0.12
		Open all year	0.22
		Decommissioned	28.70
	Gated all year	Gated all year	0.29
[1] June 1 to November 30 [2] July 1 to November 30			

Conservation Measures: The conservation measures being applied to the following project activities includes: timber management, wildland fire management, recreation management, and forest/backcountry roads/trails. The conservation measures are described below.

Prescribed fire operations will occur only during the period September 1 to March 1.

No mechanical harvest will occur after implementation of fire treatments.

Mechanical treatments will not remove any existing coarse woody debris (CWD).

Within regeneration treatment (ID # 8 and 10) areas, CWD recruitment will be facilitated by retaining an average of 20 logs per acre in addition to snag recruitment trees. Snags will be a combination of down logs and live standing trees. The trees will be the largest available within the unit and greater than 8 inches diameter at breast height (DBH). Following mechanical treatments and prescribed fire, the density of retention trees will be evaluated. Where treatment units do not contain trees large enough for CWD recruitment, treatment slash will be piled for wildlife habitat. Piles should average 10 feet long, 10 feet wide, and 5 feet high and number 4 to 8 piles per acre.

Mechanical treatments will not remove any existing dead standing trees (snags) greater than 8 inches DBH except where removal for safety is necessary. Snag recruitment will be facilitated in regeneration treatment stands, by retaining no fewer than 40 standing green trees per 5 acres (average of eight per acre; in addition to CWD recruitment trees). These trees will be the largest available within the unit and greater than 8 inches DBH. The arrangement of these trees will likely create patches on the landscape. However, individual trees that best meet the size requirements for retention will be retained. Following mechanical treatments and prescribed fire, the density of retention trees will be evaluated and where snag recruitment has not been achieved, trees will be killed and left standing. Leave

trees with defects or features such as broken tops, cankers, heart rot, or any existing cavities for snag recruitment.

When treating areas incurring natural disturbance (e.g. blowdown, fire, insects/pathogens mortality) salvage harvest will occur when the affected area is larger than 5 acres.

Proposed burn units will not be salvaged for commercial or personal use fuel wood.

Green Ridge Mountain Pine Beetle Treatment

The proposed action is to conduct Mountain Pine beetle (MPB) treatments utilizing seven silviculture prescriptions to treat 8,078 acres of national forest land dominated by medium to large-sized lodgepole pine stands and construct or reconstruct a total 27.8 miles of road for access. Duration of the proposal is expected to be eight years beginning in the year 2003 and ending in 2010. The purpose of the timber harvests is to salvage dead and beetle-infested lodgepole pine stands and to suppress/reduce the spread of mountain pine beetle from infested stands to adjacent uninfested lodgepole pine. Treatments are proposed entirely within lodgepole and aspen stands situated on or near the Parks Ranger District, Medicine Bow-Routt National Forest.

The analysis area is located in Jackson County, Colorado on National Forest Lands immediately south and east of the Town of Rand. The entire action area is depicted within the mapped area of the Gould, Buffalo Peak, Rand, Jack Creek Ranch and Parkview Mountain 7.5-minute U.S. Geological Survey topographic quadrangles. All proposed action sites are located inside the area legally described as T. 5 N., R. 77 W.; T. 5 N., R. 78 W.; T. 5 N., R. 79 W.; T. 6 N., R. 78 W. of the 6th Principal Meridian (please refer to biological assessment/biological evaluation Appendix A).

Due to the size of this proposal, logging tracts would be separated into four or more commercial timber sales for implementation. The first sale is tentatively scheduled to be sold during the summer, fall or winter of 2003, and would include high priority treatment units located along the Forest boundary. The rest of the proposed sales would occur during 2004 to 2006. Depending on the amount of area and timber included, duration of each timber sale would be 2 to 5 years to complete.

Associated projects with the beetle treatments/timber sales would include: lodgepole pine seed collection, broadcast seeding, slash treatment, regeneration surveys, release and weed thinning, wildlife habitat enhancement projects, interpretive signs, personal use firewood, noxious weed control, native grass propagation/seeding, soil and water conservation projects and road decommissioning.

Silviculture Treatment Descriptions

Seven silviculture prescriptions are proposed within the action area. Excluding clear-cuts, only lodgepole pine would be targeted for cutting in the treatment areas. All other live conifer trees (*e.g.*, Engelmann spruce, subalpine fir, limber pine, Douglas fir and ponderosa pine) would be

excluded from cutting because of their low numbers and patchy distribution in action areas. In addition, live aspen is excluded from cutting except in clear-cuts.

The operational characteristics of each treatment differ but every treatment has been developed to meet the need for action described above (please refer to the Draft EIS for greater detail). The logging treatments proposed are summarized below. For brevity, please see biological evaluation (BE) Appendix E for a complete description of reserve or legacy trees referenced below. In addition, for all treatments, description of tree cutting, skidding and slash disposal methodology are described under clearcut.

Clear-cut-medium and large-sized lodgepole pine cover type: Removes the current mature stand to regenerate a new forest. A number of large dead trees (snags) and live trees would be reserved for wildlife habitat and to provide a "legacy" of large woody material to the site.

Trees would probably be felled using a tracked feller/buncher, or by people using chainsaws. Bucking and delimbing would most likely be accomplished using a machine (boom delimber) but may be done by people using chainsaws. Some form of log forwarding tractor would be used to skid logs to a landing; therefore, native surface skid roads would wind through each treated stand. Many log landing locations would be needed to collect felled trees within the numerous stands being treated. Once logging is complete, skidroads would be scarified and a certified weed free native grass seed mix may be spread over the former tractor trails, if needed, for erosion control. Lodgepole pine seed may be spread in stands where lodgepole pines have low numbers of serotinous cones.

Limbing and bucking would generally occur inside the stand. Areas of concentrated slash would be either broadcast burned, piled and then burned later, and/or crushed to minimize the fuel hazard and to help regenerate new trees. Rotten or otherwise unutilized down trees larger than seven inches in diameter on the small end left inside a stand following logging, would not be targeted for disposal. Most of this larger woody debris would be left scattered in treatment areas. The smaller sized debris and slash collected into piles would be burned after November 15 but before April 30. Fall, winter and early spring snow cover would help confine fire to the pile being burned. Broadcast burning could occur later into spring.

Logging operations are proposed to occur during the "normal operating season," June 1 through November 15. However, the logging contractor could operate outside of the normal operating season with agreement from the Forest Service. Most likely, a logging contractor would be allowed to work over snow, during winter months, if requested except where specific operations restrictions are identified in the timber sale contract.

Shelterwood Removal Cut-medium and large sized lodgepole pine cover type: Most dead and/or beetle infested, merchantable lodgepole pine in the existing overstory would be salvaged/harvested (>80 percent). The stand's understory of young lodgepole and aspen would be retained and protected to the extent practicable. A number of large dead trees (snags) and live

trees would be reserved for wildlife habitat and to provide a "legacy" of large woody material to the site

Shelterwood Seed Cut-medium and large sized lodgepole pine cover type: Most dead and/or beetle infested, merchantable lodgepole pine in the overstory would be salvaged/harvested (60-80 percent), retaining scattered uninfested lodgepole in the overstory to maintain shelter and provide a seed source for new lodgepole regeneration in the understory. A number of large dead trees (snags) and live trees would be reserved for wildlife habitat and to provide a "legacy" of large woody material to the site

Shelterwood Preparatory Cut-medium/large sized lodgepole pine cover type: Thirty to 40 percent of the existing overstory would be partially cut to foster potential seed producing trees. This treatment would be aimed at forest stands that currently do not have significant beetle activity. The emphasis for tree cutting in this treatment is to harvest merchantable lodgepole pines that would be most susceptible to future beetle attack and leaving trees believed to be the most vigorous or resilient. Because trees chosen for cutting are often the larger pines in the stand (due to their vulnerability to beetle attack), this treatment would not have the same outcome as a low thinning (or "intermediate" cutting) even though tree spacing would be increased. A number of large dead trees (snags) and live trees would be reserved for wildlife habitat and to provide a "legacy" of large woody material to the site

Improvement cut-Remove lodgepole from aspen dominated areas: Most large live lodgepole pine trees would be felled or otherwise killed in selected aspen dominated groves. On each acre, some existing standing dead trees and larger live pines would be retained within aspen groves, as described in BE Appendix E. Most live, merchantable lodgepole pines cut down would be removed from the stand; however, some felled trees might be left in place in situations where skidding would cause undue damage to residual aspens. In addition, some large diameter isolated pines might simply be girdled and left standing in place

Salvage-medium and large sized lodgepole pine cover type: Applied to forest stands that have been previously thinned but that have some active pockets of beetle infestation. This treatment would cut and remove existing dead or infested trees (salvaged) and help to "suppress" the buildup of MPB populations. Potentially, 20 to 30 percent of the existing overstory might be removed but sufficient trees would remain to ensure the stand is at least minimally stocked. Some large dead trees (snags) and live trees would be reserved for wildlife habitat and to provide a "legacy" of large woody material to the site.

Sanitation/Salvage-medium and large sized lodgepole pine cover type: Removes 30 to 40 percent of the existing overstory in stands where recent beetle infestation has begun or is limited in extent. In addition to salvaging dead and infested trees, sanitation targets the removal of pines believed imminently susceptible to attack, to reduce the spread of beetles.

The result would be similar to a thin in that fewer trees occupy a site and individual tree heartiness is improved. Existing mortality, active beetle infestation and potential host trees drive

the selection of trees to cut. Consequently, the pines removed are typically the larger trees in the stand.

Summary of total acres treated by timber harvest method for the Proposed Action.

Timber Harvest Method	Estimated Total Acres
Clearcut	830
Shelterwood-Removal Cut	90
Shelterwood-Seed Cut	409
Shelterwood-Preparatory Cut	1,613
Removal of Lodgepole Pine from Aspen Stands-Improvement Cut	114
Salvage	727
Sanitation/Salvage	4,295
Total	8,078 Acres

Most portions of the analysis area are well roaded. New roads would be created in proposed isolated MPB logging areas. To reduce the amount of road construction on the National Forest and to help expedite beetle treatments, local landowners adjacent to National Forest lands have expressed a willingness to grant temporary access. It is anticipated that the first sale would require private landowner permission and include most if not all of the temporary easements required for crossing private land. The 2004 to 2006 sales include most of the new road construction.

All new specified and temporary roads would be constructed using standards that produce a low impact or small ground disturbance footprint. To regulate use of new roads during project implementation, gates would be installed to control vehicle use. Following the completion of scheduled treatments, all temporary roads would be closed typically by obliterating the running surface. All new specified roads built on the National Forest would be closed to public motorized use following project completion but the road surface would be retained for administrative use. Exception to this would be in situations where a newly constructed road would replace an existing road that is scheduled for decommissioning. In these replacement situations, the new road would remain open for public and administrative use. In addition to closing newly constructed roads, approximately 11.1 miles of existing road would be closed and/or decommissioned.

Lost Park Grazing Allotment

The proposed action would continue with the current allotment management plan (AMP) for Lost Park Grazing Allotment; an active domestic sheep grazing allotment located 35 miles northwest of Steamboat Springs, Colorado within the Slater Creek and Elkhead Geographical Areas, on the Hahns Peak/Bears Ears Ranger District of the Medicine Bow-Routt National Forest.

The AMP allows stocking of two domestic sheep bands (1,000 ewes and lambs per band) using a 2-unit "deferred rotation" system within the allotment. Grazing dates for the Lost Park Unit and Sawtooth Unit are: July 1 to September 3 and July 1 to September 5 respectively.

The analysis area is currently managed according to standards and guidelines outlined in the Routt National Forest Land and Range Management Plan (USFS 1998a). The composition and structure of native plant communities, riparian areas are being managed in accordance with Proper Functioning Condition (PFC) standard and guidelines (USFS 1998a), and the area will be managed in accordance with the standards and guidelines relating to threatened, endangered, and sensitive species (USFS 1998a.)

Conservation measures from the LCAS were considered in a conservation plan specific to alleviate or eliminate negative impacts associated with domestic livestock grazing activity. The criteria are incorporated into the proposed action (BA) to ensure compliance with the LCAS conservation strategy.

Weiham Driveway Construction

The project area is located in Moffat County, Colorado on the north-central portion of the Routt National Forest Hahn's Peak Bears Ears Ranger District in T. 7 N., R. 84 W., section 28, south ½ of SE ¼.

The proposed action is to construct an access road from Routt County Road 38 (Buffalo Pass) through Forest Service lands to a private inholding. Approximately 320 feet (about 97.5 meters) of new road construction is being purposed. Total acreage would be approximately 0.1 acres. The driveway will be plowed throughout the winter season beginning the winter of 2003. Clearance is needed for a 10-year private road easement.

Conservation Measures: Yearly monitoring of the driveway and immediate vicinity (10-15 feet off driveway) by Forest Service personnel for the presence of noxious/exotic weeds for three consecutive years following implementation. Noxious/exotic weeds will be chemically sprayed by the permittee to eliminate unwanted species until total eradication is completed.

Bear River/Dunckley Pass/Lower Trout Creek Prescribed Burns

This project proposes to burn up to 1,250 acres (Dunckley Pass Burn-500 acres, Bear River Burn-400 acres, Lower Trout Creek Burn-350 acres) of vegetation in the spring or fall of 2003 and 2004 to improve big game winter range and reduce the potential of catastrophic fire. Proposed burning is in predominantly sagebrush, oak brush, grass, and aspen. Type of terrain includes, mesas, cliffs, valleys, and drainages. Existing roads will be used (no new roads). However, some ground disturbance from heavy equipment would be necessary other than emergency bulldozed control lines in non-wilderness areas. Burn crews will travel on foot off of Forest Service roads. Equipment used includes handtools, torches, and burn mix. Relevant

conservation measures described in the LCAS are included as part of the proposed action as described in the BA.

The burns are located in Routt National Forest's Yampa Ranger District, Routt and Rio Blanco counties, Colorado. Beaver River Burn is located in T. 1 N., R. 86 W., sections 1, 10, 11, and 12 -Orno Peak and Trapper Quad. Dunckley Pass Burn is located in T. 3 N., R. 86 W., sections 21, 22, 27, 28, and 29-Sand Point Quad. Lower Trout Creek Burn is located in T. 3 N., R. 87 W., sections 2 and 11-Dunckley and Rattlesnake Butte Quads.

Webster Pass Mining Exploration 2003

The Pike and San Isabel National Forests and the Comanche and Cimarron National Grasslands propose to conduct exploratory drilling within the Southern Rocky Mountain geographic area of Park County, approximately four miles south of the Town of Montezuma, Colorado. Six drilling test sites are proposed in T. 6 S., R. 76 W., section 18 and T. 6 S., R.75 W., on existing mining claims (Webster Pass Mill Site and Webster Pass Numbers 1-20 lodes) identified on Map 1 of the BA.

Sites: Each site consists of a level 20x40 square foot drill pad. Three-inch diameter holes would be drilled to a depth of 2,500 feet. From this material, 2-inch core samples are removed for geochemical testing. Each test hole produces a few gallons of material that are dried and left on site. Drilling would occur 24 hours/day, seven days a week until the weather deteriorates in early fall (likely September).

Water: Approximately 100 gallons of water per day from Handcart Gulch would be pumped to the project sites for drilling operations. Spent water would be held and recycled for subsequent drilling. Additional stream water would replace the amount lost in the drill hole. The maximum water depletion expected is: 100 gallons/day over 120 days resulting in 12,000 gallons (0.037 acre-foot) for the summer operation.
The BA made no determination on the effects the proposed action may have on federally listed species. However, because of your request for concurrence with the depletion calculation, the Service assumes that the Forest Service believes that the depletion associated with the action "may affect and is likely to adversely affect" the whooping crane (*Grus americana*), the interior least tern (*Sterna antillarum*), the piping plover (*Charadrius melodus*) and the pallid sturgeon (*Scaphirhynchus albus)* and may have an impact on designated critical habitat. The Service is basing this opinion on this assumption and the issues addressed as follows:

Since 1978, the Service has consistently taken the position in its section 7 consultations that Federal agency actions resulting in water depletions to the Platte River system are likely to jeopardize the continued existence of one or more federally listed threatened or endangered species and adversely modify or destroy designated and proposed critical habitat. During the course of informal consultations with a number of Federal agencies, the Service learned that there are over 1,000 proposed projects, which will deplete water from the Platte River system and require formal section 7 consultation. It was also determined that the vast majority of these

projects would likely result in individual depletions of 25 acre-feet or less per year. To effectively deal with such an anticipated large workload, it was necessary for the Service to develop a streamlined approach, which meets the requirements of section 7 for offsetting the adverse effects of each Federal agency action resulting in minor water depletion.

An intra-Service section 7 consultation was conducted in coordination with those Federal agencies whose actions may result in minor water depletions of 25 acre-feet or less per year to the Platte River system. This led to the issuance of a biological opinion by the Service on June 13, 1996, which provides reasonable and prudent alternatives to avoid the likelihood of jeopardy to federally listed species and adverse modification or destruction of designated critical habitat occurring along the Platte River. A revision of the 1996 biological opinion made a no jeopardy determination contingent upon the implementation of conservation measures (formerly reasonable and prudent alternatives in the 1996 biological opinion) by the Federal agencies. To satisfy the requirements of the Act, Federal action agencies and project proponents (i.e., Federal and non-federal) are provided conservation measures described in the 2002 revised biological opinion furnished to your agency. Consequently, the Service has determined that the proposed project is likely to adversely affect the federally listed whooping crane, interior least tern, piping plover, pallid sturgeon, designated whooping crane critical habitat, and piping plover critical habitat.

It is our understanding that you intend to take advantage of the reasonable and prudent measure authorizing the use of funds in a National Fish and Wildlife Foundation account to offset the project related impacts to Platte River fish and wildlife resources. Therefore, it has been calculated that $7.98 will be debited from the Foundation account to use in restoring Platte River habitat as described in the referenced biological opinion.

The Service hereby agrees that the process described above will serve to offset the project related impacts and avoid the likelihood of adverse effects to federally listed species and their designated critical habitat. Any need for reinitiation of formal consultation on this proposed action is outlined in the conclusion section of the referenced biological opinion.

Roads: Existing National Forest system roads and non-system two-tracks would be minimally maintained to restore drainage and improve access. To access two of the six drill sites, approximately 1,600 feet of new road would be added to the end of 1,400 feet of road constructed in 2002. In addition, four 50-foot access spur roads may be needed to reach the remaining drill sites. New road corridors would be twelve feet or less in width. Road maintenance and construction is expected to begin June 1, 2003, weather and snow conditions permitting. All newly constructed roads are projected to be temporary; road closures and restoration would be required.

Reclamation: Drill sites would be graded and vegetated with native pioneer species where possible. Roads would remain open until completion of all exploration, at which time they would be graded and vegetated where appropriate. Physical closures would be required on several of these roads.

Conservation Measures: Access roads and drill pads in forested areas shall be physically closed to all vehicles at the completion of work to result in no net increase in snow compaction in the area. Minimize disturbance to all habitats by: 1) avoiding forested patches, 2) driving over ground vegetation rather than blade road surfaces, 3) reducing the size of the drilling platforms to minimum required, and 4) keeping less critical vehicles and equipment outside of forested areas.

Contour and vegetate all disturbed areas. As a minimum, 50 percent of the current ground cover must be reestablished. Native pioneer species may be used. Revegetation at this elevation is extremely difficult. Outside assistance recommended.

Mount Massive Route Stabilization Project

The proposed action is to construct new and restore existing trails within the San Isabel National Forest Mount Massive Wilderness Area in Lake County approximately four miles southwest of Leadville, Colorado. The project area is defined within a 1-mile radius of the project site (i.e. route or "treadway"). The site elevation ranges from 9,000 to over 14,000 feet. The project is located within the roadless southern area portion of the Tennessee Pass LAU.

North Halfmoon Routes: The Forest Service proposes to construct a single identified route on the west side of Mount Massive (FDT 1451) beginning one mile up from the trailhead junction of North Halfmoon Lakes trail. The route continues for a distance of 11,200 linear feet in a northwesterly direction to the Mount Massive ridgeline at 14,000 feet elevation. Where needed, intermittent segments of trail treadway will be constructed 18 inches wide, out sloped and/or water barred for drainage. All actions would be implemented using hand tools. Proposed activities would occur from June through September in 2003 and 2004.

Main Massive Route: The Forest Service proposes to define a single identified route along the Main Mount Massive trail. The treadway will be 18 inches wide, out sloped and/or water barred for drainage, with rock steps and check dams located at critical points. The Continental Divide/Colorado Trail will be rerouted from the crossing of Willow Creek to a location north along the existing trail. Duplicate or abandoned routes will be closed to traffic, stabilized, and where possible, restored with native alpine vegetation. Check dams, terraces, biodegradable erosion matting, native seed, and sod cut from new trail construction, will all be used to rehabilitate the old routes. All actions would be implemented using hand tools. Proposed activities would occur from June through September in 2007 and 2008.

Alternatives: Alternatives were developed to address issues identified in Chapter 1 of the Mount Massive Route Stabilization Project (Proposed Project) EA and to meet the current management prescriptions associated with the Pike San Isabel National Forest LRMP. The second table below quantifies the impacted areas of the Alternatives. The main differences among these alternatives are the differences in the length and area of created and restored routes. These relative differences are quantified in the third table below. For a more detailed description of these alternatives, please see Section 2.0 of the Proposed Project EA and the Proposed Project map in the EA. (Note: Regardless of the Alternative, none are of any size that will change LAU acreage.)

Route length and area following implementation under each alternative.

ALTERNATIVE		LENGTH/AREA AFFECTED	
		Trail Miles	Trail Acres
North Halfmoon Alternatives			
A	No Action North Halfmoon	4.44	1.76
B	North Halfmoon West	3.78	0.90
Main Massive Alternatives			
C	No Action Main Massive	2.78	1.35
D	Construct South Route	3.27	0.94
E	Construct Modified South Route	3.25	1.17
F	Colorado Trail Reroute	2.77	1.16
D and F	Combination Alts D and F	3.28	0.75
E and F	Combination Alts E and F	3.26	0.98

Route length and area created, restored, and net under each alternative.

ALTERNATIVE		LENGTH/AREA AFFECTED					
		CREATED		RESTORED		NET	
Number	Name	**Miles**	**Acres**	**Miles**	**Acres**	**Miles**	**Acres**
	North Halfmoon Alternatives						
A	No Action North Halfmoon	0.00	0.00	0.00	0.00	0.00	0.00
B	North Halfmoon West	2.37	0.55	3.03	1.42	-0.66	-0.87
	Main Massive Alternatives						
C	No Action Main Massive	0.00	0.00	0.00	0.00	0.00	0.00
D	Construct South Route	1.63	0.34	1.14	0.75	0.49	-0.41
E	Construct Modified South Route	0.87	0.21	0.44	0.43	0.43	-0.22
F	Colorado Trail Reroute	0.53	0.13	0.52	0.32	0.01	-0.19
D and F	Combination Alts D and F	2.16	0.47	1.66	1.07	0.50	-0.60
E and F	Combination Alts E and F	1.40	0.34	0.96	0.75	0.44	-0.41
[1] Net created = Created-Restored							

Dinner Park Timber Sale

The Dinner Park Timber Sale project is a part of the timber harvest direction addressed in the Tie Camp Timber Sale Final EIS. The Tie Camp portion of the proposal is located in Wyoming. The Dinner Park proposal is located in Colorado. All following references will apply to the Dinner Park project proposal only.

The 316 acre Dinner Park portion of the Tie Camp Timber Sale is located in Jackson County, Colorado, within the Parks Ranger District, T. 12 N., R. 83 W., sections 21, 22, 23, and 24, 6th Principal Meridian. The majority of the project area is visible along Primary Forest road #80. The project occurs within the 32,674-acre Sierra Madre linkage corridor ranging in 9,200' to 9,700' elevation. No harvest from the proposed action occurs within a LAU. However, one 8.6-acre clear-cut unit occurs less than 500m from the Encampment River LAU boundary

The proposed action will use regeneration, intermediate and uneven age harvesting described in Table 1 below. In lodgepole pine stands, proposed timber sale treatments would remove overstory trees and temporarily diminish understory vegetation. Thinning would occur in aspen cover types. The proposed action would remove all overstory cover on 63 acres and reduce canopy cover on 253 acres.

Within the Colorado Dinner Park sale, approximately 1.8 million board feet will be harvested on an estimated 316 acres, in 12 harvest units, through silvicultural treatments on NFS lands in the vicinity of Dinner Park and Damfino Creek. The decision will employ a variety of silvicultural treatments described in the table below.

Dinner Park Timber Sale

Clear-cut	15 acres	240 MBF
Overstory Removal	48 acres	135 MBF
Group Shelterwood	108 acres	440 MBF
Seed Cut (Shelterwood)	98 acres	670 MBF
Sanitation/Salvage	47 acres	350 MBF

The existing transportation system will be used to facilitate harvest, with approximately 2.4 miles of temporary road construction. Following the completion of the timber sale and post-sale work, all temporary roads will be obliterated.

Conservation Measures: Planned retention of forked or multiple topped pines would likely help counteract adverse effects to red squirrel habitat. Retain some dead or defective live trees. Retain some accumulated debris on the forest floor. Suitable lynx habitat will not be changed by treatment actions so greatly as to render it unsuitable for lynx use.

STATUS OF THE SPECIES /CRITICAL HABITAT DESCRIPTION

Species/Critical Habitat Description

The lynx is a medium-sized cat with long legs; large, well-furred paws; long tufts on the ears; and a short, black-tipped tail (McCord and Cardoza 1982). The winter pelage of the lynx is dense and has a grizzled appearance with grayish-brown mixed with buff or pale brown fur on the back, and grayish-white or buff-white fur on the belly, legs and feet. Summer pelage of the lynx is more reddish to gray-brown (Koehler and Aubry 1994). Adult males average 10 kilograms (22 pounds) in weight and 85 centimeters (33.5 inches) in length (head to tail), and females average 8.5 kilograms (19 pounds) and 82 centimeters (32 inches) (Quinn and Parker 1987). The lynx's long legs and large feet make it highly adapted for hunting in deep snow.

Classification of the Canada lynx (also called the North American lynx) has been subject to revision. In accordance with Wilson and Reeder (1993), the lynx in North America is *Lynx canadensis*. Previously the Latin name *L. lynx canadensis* was used for lynx (Jones et al. 1992; S. Williams, Texas Tech University, pers. comm. 1994). Other scientific names still in use include *Felis lynx* or *F. lynx canadensis* (Jones et al. 1986; Tumlison 1987).

In 1998, the lynx was proposed for listing as a threatened species under the Act (63 FR, July 8, 1998). The lynx in the contiguous United States were listed as threatened effective April 23, 2000 (65 FR 16052, March 24, 2000). The Service identified one distinct population segment in the lower 48 states. No critical habitat has been designated for the threatened population of Canada lynx in the contiguous United States. As explained in the final rule (65 FR 16052, March 24, 2000), designation of critical habitat would be prudent, but has been deferred until other higher priority work can be completed within the Service's current budget.

Life History

Home range and dispersal: Lynx home range size varies by the animal's gender, abundance of prey, season and the density of lynx populations (Hatler 1988; Koehler 1990; Poole 1994; Slough and Mowat 1996; Aubry et al. 2000; Mowat et al. 2000). Documented home ranges vary from 8 to 800 square kilometers (3 to 300 square miles) (Saunders 1963; Brand et al. 1976; Mech 1980; Parker et al. 1983; Koehler and Aubry 1994; Apps 2000; Mowat et al. 2000; Squires and Laurion 1999). Preliminary research supports the hypothesis that lynx home ranges at the southern extent of the species' range are generally large compared to those in the core of the range in Canada (Koehler and Aubry 1994; Apps 2000; Squires and Laurion 1999).

Lynx are capable of dispersing extremely long distances (Mech 1977; Washington Department of Wildlife 1993); for example, a male was documented traveling 616 kilometers (370 miles) (Brainerd 1985). Lynx disperse primarily when snowshoe hare populations decline (Ward and Krebs 1985; Koehler and Aubry 1994; O'Donoghue et al. 1997; Poole 1997). Subadult lynx disperse even when prey is abundant (Poole 1997), presumably as an innate response to establish home ranges.

During the early 1960s and 1970s, there were numerous occurrences of lynx documented in atypical habitat, such as in North Dakota. In those years, harvest returns indicated unprecedented cyclic lynx highs for the 20th century in Canada (Adams 1963; Harger 1965; Mech 1973; Gunderson 1978; Thiel 1987; McKelvey et al. 2000b). Many of these unusual observations were probably dispersing animals that either were lost from the population or later returned to suitable habitat.

Diet: Snowshoe hares are the primary prey of lynx, comprising 35-97 percent of the diet throughout the range of the lynx (Koehler and Aubry 1994). Other prey species include red squirrel (*Tamiasciurus hudsonicus*), grouse (*Bonasa umbellus*, *Dendragopus* spp., *Lagopus* spp.), flying squirrel (*Glaucomys sabrinus*), ground squirrel (*Spermophilus parryii*, *S. Richardsonii*), porcupine (*Erethrizon dorsatum*), beaver (*Castor canadensis*), mice (*Peromyscus* spp.), voles (*Microtus* spp.), shrews (*Sorex* spp.), fish, and ungulates as carrion or occasionally as prey (Saunders 1963; Van Zyll de Jong 1966; Nellis et al. 1972; Brand et al. 1976; Brand and Keith 1979; Koehler 1990; Staples 1995; O'Donoghue et al. 1998).

During the cycle when hares become scarce, the proportion and importance of other prey species, especially red squirrel, increases in the diet (Brand et al. 1976; O'Donoghue et al. 1998; Apps 2000; Mowat et al. 2000). However, Koehler (1990) suggested that a diet of red squirrels alone might not be adequate to ensure lynx reproduction and survival of kittens.

Most research has focused on the winter diet. Summer diets are poorly understood throughout the range of lynx. Mowat et al. (2000) reported through their review of the literature that summer diets have less snowshoe hare and more alternate prey species, possibly because of a greater availability of other species.

There has been little research on lynx diet specific to the southern portion of its range except in Washington (Koehler et al. 1979; Koehler 1990). Southern populations of lynx may prey on a wider diversity of species than northern populations because of lower average hare densities and differences in small mammal communities. In areas characterized by patchy distribution of lynx habitat, lynx may prey opportunistically on other species that occur in adjacent habitats, potentially including white-tailed jackrabbit (*Lepus townsendii*), black-tailed jackrabbit (*Lepus californicus*), sage-grouse (*Centrocercus urophasianus*), and Columbian sharp-tailed grouse *(Tympanichus phasianellus*) (Quinn and Parker 1987; Lewis and Wenger 1998).

In northern regions, when hare densities decline, the lower quality diet causes sudden decreases in the productivity of adult female lynx and decreased survival of kittens, which causes the numbers of breeding lynx to level off or decrease (Nellis et al. 1972; Brand et al. 1976; Brand and Keith 1979; Poole 1994; Slough and Mowat 1996; O'Donoghue et al. 1997). Relative densities of snowshoe hares at southern latitudes are generally lower than those in the north, and differing interpretations of the population dynamics of southern populations of snowshoe hare have been proposed (Hodges 2000b).

Snowshoe hares have evolved to survive in areas that receive deep snow (Bittner and Rongstad 1982). Primary forest types that support snowshoe hare are subalpine fir, Engelmann spruce, Douglas fir, and lodgepole pine in the western United States, and spruce/fir, pine, and deciduous forests in the eastern United States (Hodges 2000b). Within these habitat types, snowshoe hares prefer stands of conifers with shrub understories that provide forage, cover to escape predators, and protection during extreme weather (Wolfe et al. 1982; Monthey 1986; Koehler and Aubrey 1994). Hares' use of habitat is correlated with understory cover (Hodges 2000a). Early successional forest stages generally have greater understory structure than do mature forests and therefore support higher hare densities (Hodges 2000a, b). However, mature forests can also provide snowshoe hare habitat as openings are created in the canopy when trees succumb to disease, fire, wind, ice, or insects, and the understory develops (Ruggerio et al. 1999).

Lynx seem to prefer to move through continuous forest, using the highest terrain available such as ridges and saddles (Koehler 1990; Staples 1995). Cover is important to lynx when searching for food (Brand et al. 1976) but lynx often hunt along edges (Mowat et al. 2000). Kesterson (1988) and Staples (1995) reported that lynx hunted along the edges of mature stands within a burned forest matrix and Major (1989) found that lynx hunted along the edge of dense riparian willow stands. Lynx have been observed (via snow tracking) to avoid large openings (Koehler 1990; Staples 1995) during daily movements within the home range.

Den site selection: Lynx use large woody debris, such as downed logs, root wads and windfalls, to provide denning sites with security and thermal cover for kittens (McCord and Cardoza 1982; Koehler 1990; Koehler and Brittell 1990; Mowat et al. 2000; Squires and Laurion 1999). During the first few months of life, kittens are left alone at these sites when the female lynx hunts. Downed logs and overhead cover provide protection of kittens from predators, such as owls, hawks and other carnivores during this period.

The age of the forest stand does not seem as important for denning habitat as the amount of downed, woody debris available (Mowat et al. 2000). Den sites may be located within older regenerating stands (>20 years since disturbance) or in mature conifer or mixed conifer-deciduous (typically spruce/fir or spruce/birch) forests. In Washington, lynx used lodgepole pine, spruce, and subalpine fir forests older than 200 years with an abundance of downed woody debris for denning (Koehler 1990). A den site in Wyoming was located in a mature subalpine fir/lodgepole pine forest with abundant downed logs and a high amount of horizontal cover (Squires and Laurion 1999). A lynx den site found in Maine in 1999 was located in a forest stand in red spruce (*Picea rubra*) (cover type that was logged in 1930 and again in the 1980s and is regenerating into hardwoods (USFWS, *in litt*. 1999). The site had a dense understory and an abundance of dead and downed wood.

Denning habitat must be in or near foraging habitat to be functional. The hunting range of females is restricted at the time of parturition, and their need to feed kittens requires an abundance of prey. Lynx, like other carnivores, frequently move their kittens until they are old enough to hunt with their mother. Multiple nursery sites are needed that provide kittens with overhead cover and protection from predators and the elements. Downed logs and overhead

cover must also be available throughout the home range to provide security when lynx kittens are old enough to travel (Bailey 1974).

Recruitment: Breeding occurs through March and April in the north (Quinn and Parker 1987). Kittens are born in May to June in south-central Yukon (Slough and Mowat 1996). The male lynx does not help with rearing young (Eisenberg 1986). Slough and Mowat (1996) reported yearling females giving birth during periods when hares were abundant; male lynx may be incapable of breeding during their first year (McCord and Cardoza 1982).

In northern study areas during the low phase of the hare cycle, few, if any, live kittens are born and few yearling females conceive (Brand and Keith 1979; Poole 1994; Slough and Mowat 1996). However, Mowat et al. (2000) suggested that in the far north, some lynx recruitment occurs when hares are scarce and this may be important in lynx population maintenance during hare lows. During periods of hare abundance in the northern taiga, litter size of adult females averages 4 to 5 kittens (Mowat et al. 1996).

Koehler (1990) suggested that the low number of kittens produced in north-central Washington was comparable to northern populations during periods of low snowshoe hare abundance. In his study area, 2 radio-collared females had litters of 3 and 4 kittens in 1986 and 1 kitten in 1987 (the actual litter size of one of the females in 1987 was not determined) (Koehler 1990). Of the known size litters in Washington, one kitten survived the first winter.

In Montana, Squires and Laurion (1999) reported that one marked female produced two kittens in 1998. In 1999, two of three females produced litters of two kittens each. In Wyoming (Squires and Laurion 1999), one female produced 4 kittens in 1998, but snow tracking indicated that the kittens were not with the female in November and were presumed dead. The same female produced 2 kittens in 1999.

Mortality: Reported causes of lynx mortality vary between studies. The most commonly reported causes include starvation of kittens (Quinn and Parker 1987; Koehler 1990), and human-caused mortality, mostly fur trapping (Ward and Krebs 1985; Bailey et al. 1986).

Significant lynx mortality due to starvation has been demonstrated in cyclic populations of the northern taiga, during the first two years of hare scarcity (Poole 1994; Slough and Mowat 1996). Various studies have shown that, during periods of low snowshoe hare numbers, starvation can account for up to two-thirds of all natural lynx deaths. Trapping mortality may be additive rather than compensatory during the low period of the snowshoe hare cycle (Brand and Keith 1979). Hunger-related stress, which induces dispersal, may increase the exposure of lynx to other forms of mortality such as trapping and highway collisions (Brand and Keith 1979; Carbyn and Patriquin 1983; Ward and Krebs 1985; Bailey et al. 1986).

Paved roads have been a mortality factor in lynx translocation efforts within historical lynx range. In New York, 18 translocated lynx were killed on highways (Brocke et al. 1990). It has been suggested by Brocke et al. (1990) that translocated animals may be more vulnerable to

highway mortality than resident lynx. Two lynx were killed on 2- and 4-lane Colorado highways following their release as part of a reintroduction effort there (G. Byrne, CDOW, pers. comm. 1999).

Other than translocated animals, there have been 2 documented occurrences of highway mortality in Wisconsin (Theil 1987) and Minnesota (Don Carlos, unpublished report 1997). Twelve resident lynx were documented being killed on highways in Canada and Alaska (Staples 1995; Gibeau and Heur 1996; T. Clevenger, pers. comm. 1999; Alexander, pers. comm. 1999).

Predation on lynx by mountain lion, coyote (*Canis latrans*), wolverine (*Gulo gulo*), gray wolf (*Canis lupus*), fisher (*martes pennanti*) and other lynx has been confirmed (Berrie 1974; Koehler et al. 1979; Poole 1994; Slough and Mowat 1996; O'Donoghue et al. 1997; Apps 2000; Vashon et al. 2003; Squires and Laurion 1999). Squires and Laurion (1999) reported 2 of 6 mortalities of radio-collared lynx in Montana were due to mountain lion predation. Observations of such events are rare, and the significance of predation on lynx populations is unknown.

Interspecific relationships with other carnivores: (Ruggerio et al. 1999) described the two major competition impacts to lynx as exploitation (competition for food) and interference (avoidance). Of several predators examined (birds of prey, coyote, gray wolf, mountain lion, bobcat, and wolverine), coyotes were deemed to most likely pose local or regionally important exploitation impacts to lynx, and coyotes and bobcats were deemed to possibly impart important interference competition effects on lynx. Mountain lions were described as interference competitors, possibly impacting lynx during summer and in areas lacking deep snow in winter, or when high elevation snow packs develop crust in the spring.

Exploitation competition may contribute to lynx starvation and reduced recruitment. During periods of low snowshoe hare numbers, starvation accounted for up to two-thirds of all natural lynx deaths in the Northwest Territories of Canada (Poole 1994). As described previously, major predators of snowshoe hare include lynx, northern goshawk, great horned owl, bobcat, coyote, red fox, fisher, and mountain lion. In southern portions of snowshoe hare range, predators may limit hare populations to lower densities than in the taiga (Dolbeer and Clark 1975; Wolff 1980; Koehler and Aubry 1994).

Based on only anecdotal evidence, Parker et al. (1983) discussed competition between bobcats and lynx on Cape Breton Island. Lynx were found to be common over much of the island prior to bobcat colonization. Concurrent with the colonization of the island by bobcats, lynx densities declined and their presence on the island became restricted to the highlands, the one area where bobcats did not become established.

Population Dynamic

In Canada and Alaska, lynx populations undergo extreme fluctuations in response to snowshoe hare population cycles, enlarging or dispersing from their home ranges and ceasing the recruitment of young into the population after hare populations decline (Mowat et al. 2000). In

the southern portion of the range in the contiguous United States, lynx populations appear to be naturally limited by the availability of snowshoe hares, as suggested by large home range size, high kitten mortality due to starvation, and greater reliance on alternate prey. These characteristics appear to be similar to those exhibited by lynx populations in the taiga during the low phase of the population cycle (Quinn and Parker 1987, Koehler 1990, Aubry et al. 2000). This is likely due to the inherently patchy distribution of lynx and hare habitat in the contiguous United States and corresponding lower densities of hares.

A lack of accurate data limits our understanding of lynx population dynamics in the contiguous United States and precludes drawing definitive conclusions about lynx population trends. Formal surveys designed specifically to detect lynx have rarely been conducted. Many reports of lynx (e.g., visual observations, snow tracks) have been collected incidentally to other activities, but cannot be used to infer population trends. Long-term trapping data have been used to estimate population trends for various species. However, trapping returns are strongly influenced by trapper effort, which varies between years, and therefore may not accurately reflect population trends. Another important problem is that trapping records of many States did not differentiate between bobcats and lynx, referring to both as "lynxcats." Overall, the available data are too incomplete to infer much beyond simple occurrence and distribution of lynx in the contiguous United States (McKelvey et al. 2000b)

Lynx populations in the contiguous United States occur at the southern periphery of a metapopulation whose core is located in the northern boreal forest of central Canada (McCord and Cardoza 1982; Quinn and Parker 1987; McKelvey et al 2000a). Lynx population dynamics may emanate from the core to the periphery, as evidenced by a lagged correlation of lynx trap records and observations (McKelvey et al. 2000b; Mowat et al. 2000). In the Great Lakes Geographic Area, population dynamics in recent decades appear to be strongly driven by immigration from Canada (McKelvey et al. 2000b). In other areas and time periods, however, it is not known to what extent the correlation is due to immigration from Canada, population responses to the same factors controlling northern populations, or a combination of the two.

We suspect that some areas in the contiguous United States naturally act as sources of lynx (recruitment is greater than mortality) that are able to disperse and potentially colonize other patches (McKelvey et al. 2000a). Other areas may function as sinks, where lynx mortality is greater than recruitment and lynx are lost from the overall population. Sink habitats are most likely those places on the periphery of the southern boreal forest where habitat becomes more fragmented and more distant from larger lynx populations. Fluctuations in prey populations may cause some habitat patches to change from being sinks to sources, and vice versa. The ability of naturally dynamic habitat to support lynx populations may change as the habitat undergoes natural succession following natural or manmade disturbances (i.e., fire, clearcutting).

Status and Distribution

The lynx in the contiguous United States were listed as threatened effective April 23, 2000 (65 FR 16052, March 24, 2000). At least one of five listing factors must be met for listing under the

Act. These factors include: present or threatened destruction of habitat or range, over-utilization, disease or predation, inadequacy of existing regulatory mechanisms or other natural or human-made causes. The sole factor for listing the Canada lynx as threatened was inadequacy of existing regulatory mechanisms, specifically the lack of Forest Service LRMP guidance to address the needs of lynx.

The following discussion of the status and distribution of lynx is largely excerpted from the Service's final rule (65 FR 16052, March 24, 2000). The historical and present range of the lynx north of the contiguous United States includes Alaska and that part of Canada that extends from the Yukon and Northwest Territories south across the United States border and east to New Brunswick and Nova Scotia. In the contiguous United States, lynx historically occurred in the Cascades Range of Washington and Oregon; the Rocky Mountain Range in Montana, Wyoming, Idaho, eastern Washington, eastern Oregon, northern Utah, and Colorado; the western Great Lakes Region; and the northeastern United States region from Maine southwest to New York (McCord and Cardoza 1982; Quinn and Parker 1987).

The distribution of lynx in North America is closely associated with the distribution of North American boreal forest (Agee 2000). In Canada and Alaska, lynx inhabit the classic boreal forest ecosystem known as the taiga (McCord and Cardoza 1982; Quinn and Parker 1987; Agee 2000; McKelvey et al. 2000b). The range of lynx extends south from the classic boreal forest zone into the subalpine forest of the western United States, and the boreal/hardwood forest ecotone in the eastern United States (Agee 2000; McKelvey et al. 2000b). Forests with boreal features (Agee 2000) extend south into the contiguous United States along the Cascade and Rocky Mountain Ranges in the west, the western Great Lakes Region, and along the Appalachian Mountain Range of the northeastern United States. Within these general forest types, lynx are most likely to persist in areas that receive deep snow, to which the lynx is highly adapted (Ruggiero et al. 1999). Lynx are rare or absent from the wet coastal forests of Alaska and Canada (Mowat et al. 2000).

At its southern margins in the contiguous United States, forests with boreal features, or southern boreal forests, become naturally fragmented as they transition into other vegetation types. Southern boreal forest habitat patches are small relative to the extensive northern boreal forest of Canada and Alaska, which constitutes the majority of lynx range. Many southern boreal forest habitat patches within the contiguous United States cannot support resident populations of lynx and their primary prey species.

The complexities of lynx life-history and population dynamics, combined with a general lack of reliable population data for the contiguous United States, make it difficult to ascertain the past or present population status of lynx in the contiguous United States. It is impossible to determine with certainty whether reports of lynx in many States were: 1) animals dispersing from northern populations that were effectively lost because they did not join or establish resident populations, 2) animals that were a part of a resident population that persisted for many generations, or 3) a mixture of both resident and dispersing animals.

The final rule (65 FR 16052, March 24, 2000) determining threatened status for the lynx in the contiguous United States summarized lynx status and distribution across four regions that are separated from each other by ecological barriers consisting of unsuitable lynx habitat. These distinct regions are the Northeast, the Great Lakes, the Northern Rocky Mountains/Cascades, and the Southern Rocky Mountains. While these regions are ecologically unique and discrete, the lynx is associated with southern boreal forest in each and, with the exception of the Southern Rocky Mountains Region; each area is geographically connected to the much larger population of lynx in Canada.

Northeast Region (Maine, New Hampshire, Vermont, New York: Based on an analysis of cover types and elevation zones containing most of the lynx occurrences, McKelvey et al. (2000b) determined that, at the broad scale, most lynx occurrence records in the Northeast were found within the "Mixed Forest-Coniferous Forest-Tundra" cover type at elevations ranging from 250 to 750 meters (820 to 2,460 feet). This habitat type in the northeast United States occurs along the northern Appalachian Mountain range from southeastern Quebec, western New Brunswick, and western Maine, south through northern New Hampshire. This habitat type becomes naturally more fragmented and begins to diminish to the south and west, with a disjunctive segment running north-south through Vermont, an extensive patch of habitat in the Adirondacks of northern New York, and with a few more distant and isolated patches in Pennsylvania (see Figure 8.23 in McKelvey et al. 2000b).

Based on documentation of lynx presence and reproduction in Maine, the substantial lynx harvest in southeastern Quebec, and the connectivity of boreal forest south of the St. Lawrence River in Quebec, New Brunswick, Maine, and New Hampshire, we conclude that a population of lynx continues to exist in this area, the core of the region. Connectivity between the United States and Canada north of the St. Lawrence River has been reduced by development in southeastern Canada and ice breaking to allow year-round shipping on the river.

Historical accounts provide evidence of the presence, reproduction, and persistence of lynx in several northern and western townships of Maine (Hoving 2001; R. Joseph, *in litt*. 1999), indicating the presence of a persistent resident lynx population historically. Since 1999, intensive lynx research in northern Maine has resulted in 30 different lynx radio-collared in the study area and 17 litters with 37 kittens documented (Maine Department of Inland Fisheries and Wildlife 2003; G. Matula, *in litt*. 2003), demonstrating the current existence of a resident population. Habitat for lynx and hares is currently optimal; as a result, lynx numbers are high. Snowshoe hare populations in Maine seem to have started their cyclic decline (Homyack 2003). Maine's lynx numbers are expected to decline following the snowshoe hare cycle.

Although habitat in New Hampshire is contiguous with that in Maine, the amount of current or historical lynx habitat in New Hampshire is much less than in Maine, with recent modeling predicting approximately 1,000 square kilometers (400 square miles) (Hoving 2001; C. Hoving, pers. comm. 2003). Lynx harvest records ranged from 1 to 20 per year in the 1930s and 0 to 3 per year between 1940 and 1964 (Brocke et al. 1993, McKelvey et al. 2000b). Since the 1960s, reports of lynx in New Hampshire have been rare; only two reports exist from the 1990s (M.

Amaral, USFWS, *in litt*. 1999). Although there are no records of lynx breeding in New Hampshire, based on regular harvest reports from the past and connectivity with habitats in Maine where resident lynx occur, we believe that a resident lynx population historically occurred in New Hampshire but no longer exists. However, dispersers may still occur in New Hampshire.

Little boreal forest exists currently or historically in Vermont and what habitat does exist is somewhat isolated from that in New Hampshire (W. Laroche, Vermont Department of Fish and Wildlife, *in litt*. 2003). Only four verified records of lynx exist for Vermont (McKelvey et al. 2000b; W. Laroche, *in litt*. 2003). There is no evidence that lynx reproduction ever occurred in Vermont. In the Green Mountain National Forest, all potential lynx habitat occurs in small patches that aren't large enough to support a lynx and bobcats are present throughout these areas (P. Brewster, Green Mountain and Finger Lakes National Forests, *in litt*. 2000), evidence that these areas are not suitable for lynx. Based upon the limited amount and dispersed nature of suitable habitat, lynx may occur in Vermont as dispersers but have not established resident populations.

An "island" of boreal forest exists both historically and currently in the Adirondack Mountains of New York. A resident lynx population reportedly occurred in the northern region of New York, particularly in the Adirondack Mountains, but it was considered extirpated by 1900 (Brocke 1982, McKelvey et al. 2000b). However, there are 23 verified lynx occurrences since 1900, primarily from the Adirondack Mountains (McKelvey et al. 2000b). The most recent verified record was from 1973 (McKelvey et al. 2000b), coincident with an extreme cyclic population high. Hoving's (2001) model predicted approximately 190 square kilometers (73 square miles) of potential lynx habitat in New York (C. Hoving, pers. comm. 2003), an area only slightly larger than the average home range of a single male lynx. Much of this forest is mature without the understory necessary to support a snowshoe hare population capable of sustaining lynx (G. Batcheller, New York State Division of Fish, Wildlife and Marine Resources, pers. comm. 2003). A resident population may have existed in New York prior to 1900, however, records of lynx since 1900 are of dispersers.

Great Lakes Region (Minnesota, Wisconsin, and Michigan: The majority of lynx occurrence records in the Great Lakes Region are associated with the "mixed deciduous-coniferous forest" type (McKelvey et al. 2000b). Within this general forest type, the highest frequency of lynx occurrences were in the *Acer saccharum* (sugar maple), *Tilia* spp. (basswood), *Pinus banksiana* (jack pine), *P. strobus* (white pine), and *P. resinosa* (red pine) forest types (McKelvey et al. 2000b). These types are found primarily in northeastern Minnesota, northern Wisconsin, and the western portion of Michigan's upper peninsula.

Mixed deciduous-coniferous forest covers an extensive area in this region, but much of this area is considered marginal habitat for lynx because it is a transitional forest type at the edge of the snowshoe hare range. Habitat at the edge of hare range supports lower hare densities (Buehler and Keith 1982) that may not be sufficient to support lynx reproduction. Snow depths within appropriate habitat that allow lynx a competitive advantage over other carnivores (i.e., coyotes)

occur only in limited areas in northeastern Minnesota, extreme northern Wisconsin, and Michigan's upper peninsula.

Minnesota has a substantial number of lynx reports, primarily trapping records (McKelvey et al. 2000b), as expected because of the connectivity of the boreal forest with that of Ontario, Canada, where lynx occur. Historically (1930-1976) the Minnesota lynx harvest ranged from 0 to 400 lynx per year (Henderson 1978). Approximate 10-year cycles are apparent in the data and are believed to be driven by immigration from Canada (Henderson 1978). In the past three years there have been 62 verified reports of lynx in northeastern Minnesota, 6 of which provided evidence of reproduction (usually visual observations of kittens accompanying an adult) (Minnesota Department of Natural Resources, *in litt*. 2003). This dramatic increase in reports corresponds with the timing for a cyclic population high to occur and when lynx populations directly adjacent in Ontario are high. Scientists have debated whether lynx in Minnesota are members of a long-term resident population or have dispersed from Canada and do not establish a resident population in the state (McKelvey et al. 2000b; R. Sando, Minnesota Department of Natural Resources, *in litt*. 1998). Research has been initiated that will help determine whether these animals are members of an established resident population in Minnesota or if these animals fail to persist when the cyclic population high recedes (University of Minnesota, *in litt*. 2002).

Wisconsin and Michigan have substantially fewer records of lynx (McKelvey et al. 2000b). Researchers have debated whether lynx in this region are simply dispersing lynx emigrating from Canada, are members of a resident population, or are a combination of a resident population and dispersing individuals (McKelvey et al. 2000b; R. Sando, Minnesota Department of Natural Resources, *in litt*. 1998). There is no evidence of lynx reproduction in Wisconsin or Michigan.

Within this region, we consider northeastern Minnesota to be most likely to support a resident population. Records of lynx from Wisconsin and Michigan most likely were dispersing animals.

Northern Rocky Mountain/Cascades Region (Washington, Oregon, Idaho, Wyoming, Utah, and Montana): In this region, the majority of lynx occurrences are associated at a broad scale with the "Rocky Mountain Conifer Forest"; within this type, most of the occurrences are in moist *Pseudotsuga menziesii* (Douglas fir) and western spruce/fir forests (McKelvey et al. 2000b). Most of the lynx occurrences are in the 1,500-2,000 meters (4,920-6,560 feet) elevation class (McKelvey et al. 2000b). These habitats are found in the Rocky Mountains of Montana, Idaho, eastern Washington, and Utah, the Wallowa Mountains and Blue Mountains of southeast Washington and northeastern Oregon, and the Cascade Mountains in Washington and Oregon. The majority of verified lynx occurrences in the United States and the confirmed presence of resident populations are from this region. The boreal forest of Washington, Montana, and Idaho is contiguous with that in adjacent British Columbia and Alberta, Canada.

Strong evidence exists to support the presence of resident lynx populations distributed throughout much of the forest types considered lynx habitat in western Montana and north-central and northeastern Washington. Resident lynx populations probably exist in contiguous

habitats in Idaho and northwestern Wyoming. There is no evidence of reproduction in Oregon or Utah and lynx have probably always occurred intermittently as dispersers in both states.

Southern Rocky Mountains Region (Colorado and SE Wyoming): Colorado represents the extreme southern edge of the range of the lynx. The southern boreal forest of Colorado and southeastern Wyoming is isolated from boreal forest in Utah and northwestern Wyoming by the Green River Valley and the Wyoming basin (Findley and Anderson 1956). These areas likely reduce opportunities for genetic interchange with the Northern Rocky Mountains/Cascades Region and Canada, (Halfpenny et al. 1982; Koehler and Aubry 1994).

A majority of the lynx occurrence records in Colorado and southeastern Wyoming are associated with the "Rocky Mountain Conifer Forest" type. The occurrences in the Southern Rockies were generally at higher elevations (1,250 to over 3,750 meters (4,100-12,300 feet)) than were all other occurrences in the West (McKelvey et al. 2000b).

There are relatively few historic lynx records from this region (McKelvey et al. 2000b). We are uncertain whether the Southern Rockies supported a small resident population historically or whether such records were of dispersers that arrived during extremely high population cycles. If these historic records represent resident populations rather than dispersing animals that emigrated from the Northern Rocky Mountains, Cascades or Canada, then we believe a viable native resident lynx population no longer exists in the Southern Rocky Mountains.

Reports from other locations: During the early 1960s, concurrent with an unprecedented cyclic high in Canada, lynx moved into the Great Plains and the Midwest Region of the United States (Gunderson 1978; Mech 1980; DeStefano 1987; South Dakota Natural Heritage Program, *in litt*. 1994). These records are outside of the southern boreal forests where most lynx occurrences are found (McKelvey et al. 2000b). We consider lynx observations in Nevada, North Dakota, South Dakota, Iowa, Nebraska, Indiana, Ohio, and Virginia to be individuals dispersing subsequent to periods of cyclic high lynx numbers in Canada (Hall and Kelson 1959; Burt 1954; McKelvey et al. 2000b; S. Johnson, Indiana Department of Natural Resources, in lit. 1994; P. Jones, Ohio Department of Natural Resources, in lit. 1994; W. Jobman, Smithsonian Institute, in lit. 1998). We do not consider these States to be within the contiguous United States range of lynx because they do not contain suitable lynx habitat (65 FR 16052, March 24, 2000).

Status and Distribution in the Southern Rockies

In the Southern Rockies, Canada lynx occur primarily in spruce-fir and lodgepole pine forests, at elevations between 8,000 and 12,000 feet (Ruggiero et al. 1999). *Populus tremuloides* (Quaking aspen) stands and forest edges, as well as open grass meadows and forest ecotones, may also support high numbers of hares and Canada lynx. On a landscape scale, Canada lynx habitat includes a mosaic of early seral stages that support snowshoe hare populations and late seral stages of dense old growth forest that provide ideal denning and security habitat. Connectivity between Canada lynx populations is critical: dispersal corridors should be several miles wide

with only narrow gaps. Large tracts of continuous coniferous forest are the most desirable for Canada lynx travel and dispersal (Tanimoto 1998).

Records of lynx occurrence are available from throughout most of the Southern Rocky Mountains. The last specimens of lynx taken in the Southern Rockies were from the late 1960s and early 1970s. In 1969, three lynx specimens were taken in adjacent counties in the central core of the Southern Rockies. One was shot along the Fryingpan River in Pitkin County, another on Vail Mountain (Eagle County), and a third was trapped south of Leadville in Lake County (G. Byrne, pers. comm. 1999). In 1971, the State of Colorado closed the season on lynx, making it illegal to take this species. Since then, only a few specimens have been obtained. In 1972, a lynx was trapped on Guanella Pass and another caught in a snow slide east of Bakerville, Colorado, both in Clear Creek County. During the 1973-74 winter, a pair of lynx was illegally trapped within Vail Ski Area boundaries (Thompson and Halfpenny 1989). No lynx specimens are available since those last illegal takes.

Despite the resulting lack of recent specimens, strong evidence of lynx persistence continued to surface. A Statewide lynx verification program conducted from 1978-80 by the CDOW concluded that viable, low-density lynx populations persisted in Eagle, Pitkin, Lake, and Clear Creek counties (Halfpenny and Miller 1981). Because Summit County is sandwiched between three of those counties, it is likely that lynx existed there as well. In addition, the program provided evidence of lynx occurrence in Grand and Park counties. Lack of evidence from other portions of the State was as likely a consequence of survey effort as lack of lynx.

Thompson and Halfpenny (1989) confirmed lynx in the vicinity of Vail Ski Area during the winter of 1988-89 as part of studies conducted by Vail Associates for the Category III expansion. They state in their report, "there is no question that lynx exist at Vail Ski Area and in the surrounding mountains." Follow-up work by the CDOW in 1990 and 1991 lead to the discovery of additional lynx tracks in the area. In 1991, Thompson and Halfpenny also confirmed two sets of lynx tracks at a proposed ski area site south of Wolf Creek Pass in the eastern San Juan Mountains (Andrews 1992; Thompson, pers. comm.). They believed the pair was probably a female and its kitten.

Occasional credible sighting reports and track evidence continue to be received from various parts of the State, providing additional evidence that native lynx likely still persist in low numbers in the Southern Rockies. Since the 1991 track discoveries near Vail and in the San Juans, the CDOW recorded seven lynx sightings or track locations between 1992 and 1998 that they rate as probable lynx. Three of those were by CDOW biologists. Carney (1993) reported lynx tracks from the east side of the Gore Range in Summit County. Tom Beck, a carnivore researcher with CDOW, found a set of lynx tracks in the Dolores River drainage in the west San Juans, Montezuma County in 1993. A CDOW Area Wildlife Manager observed a lynx in the southern Sangre de Cristos of Costilla County, also in 1993. Two sightings and one set of tracks were reported from Eagle County and another set of tracks was located in Larimer County north of Rocky Mountain National Park.

In 1997, photographs were taken of tracks believed to be those of lynx in the Tennessee Creek drainage on the border of Lake and Eagle counties. This is an area where possible lynx tracks were located just a few years earlier. Among the most recent credible sighting reports include one from Boreas Pass on the border of Summit and Park Counties in 1995, another from the Vail vicinity in January 1998, one from a Forest Service biologist in July 1998 on the Flattops in northwestern Colorado, and from a Park Ranger in Rocky Mountain National Park (Larimer County) in December 1998. During the 1998-99 winter, CDOW trackers following radio-collared lynx just transplanted into the San Juan Mountains, located a several-day-old lynx trail they believed may be that of a native lynx (Byrne and Shenk, CDOW, pers. comm. 1999). This location was in the same general area where Thompson and Halfpenny located lynx tracks in 1991.

Lynx tracks were confirmed in Eagle County as late as 1991, and in Summit County (Gore Range) as late as 1993 (unpublished CDOW database). Evidence has continued to indicate lynx occupancy of the central and, possibly, northern mountains through the 1990s. This evidence includes a sighting by a Forest Service biologist in July 1998 in the Flattops in northwestern Colorado, and tracks in Larimer County north of Rocky Mountain National Park. The CDOW found evidence of lynx in Eagle County and in Grand County. Radio tracking in 2000 of lynx translocated to Colorado indicated that a few individuals spent time in the Gore Range. In July 2001, CDOW reported a collared lynx in the Flattops Wilderness Area (Shenk, pers. comm. 2002). It is conceivable that native lynx may yet occupy the high mountain landscapes in Colorado.

The Canada lynx has been classified by the State of Colorado as a State endangered species since 1976. In 2000, the Service classified the lynx as a federally threatened species. Since 1978, there have been 14 investigations into naturally occurring lynx presence in Colorado conducted by the CDOW and other private and public conservation groups. Definitive evidence has not been found to document the presence of lynx from these studies though tracks attributed to lynx were found on a number of occasions.

ENVIRONMENTAL BASELINE

The environmental baseline is defined as the past and present impacts of all Federal, State or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal actions in the action area that have already undergone formal or early section 7 consultation, and the impacts of State or private actions that are contemporaneous with the consultation in progress.

Status of the Canada lynx Within the Action Area

The CDOW initiated a Canada lynx recovery program in February 1999. The program augmented any existing population with transplants from Canada and Alaska, with the intent of reestablishing viable, self-sustaining populations in primary blocks of suitable habitat throughout the Southern Rocky Mountains. Ninety-six lynx were released into the San Juan Mountains

during the winter/spring periods of 1999 and 2000 by the CDOW. In 2003, 33 additional lynx were released into south-central Colorado as part of the States recovery program. Additional lynx are to be released to further the goal of establishing a viable lynx population in Colorado. In May and June of 2003, the State of Colorado confirmed the birth of 14 lynx kittens, 2 kittens each to 2 females, a third female gave birth to 4 kittens, and 2 additional females have given birth to 3 kittens each. Evidence of reproduction, and multiple individuals within each litter suggests that there is an adequate local supply of prey. Some of the lynx initially released by the CDOW appear to have established home ranges, as demonstrated by radio telemetry (Tanya Shenk, CDOW, 2003, pers comm.). Many of the released lynx have displayed fidelity to areas away from the release areas suggesting that they have sought these areas out, and sufficient prey exists to support them. After the first year of the program, there was evidence suggesting that there was insufficient prey availability in the Southern Rockies. Diet analysis conducted by the CDOW showed that only 67 percent of the diet consisted of snowshoe hare. At this time however, 89 percent of the diet of the released lynx population consists of snowshoe hare (Shenk, CDOW, 2003, pers. comm.). This suggests that after release, lynx were seeking out areas within the ecosystem that supported high numbers of prey, and, in the mean time relied on other prey to sustain them. Most of these lynx are currently known to occupy the San Juan Mountains. A number of lynx have made and continue to make exploratory movements throughout the Southern Rockies. Several animals have taken up residence for extended periods in the central and northern mountains. Currently, lynx may exist in most major portions of the Southern Rockies Ecosystem.

Most lynx that are currently being monitored continue to use terrain within the core research area: New Mexico north to Gunnison, west as far as Taylor Mesa and east to Monarch Pass. There are some lynx north of Gunnison up to the I-70 corridor and in the Taylor Park area.

The State is currently tracking 62 of the 84 lynx still possibly alive. Radio signals have not been heard on 20 lynx since at least May 24, 2002. One of these missing lynx is the lynx hit by a truck in New Mexico, thus only 19 are truly missing. A number of these lynx are now missing because their collar batteries have died and we can no longer pickup radio signals. Some of the missing lynx may still have functioning collars but are outside the research area. Expanded flights outside the research area during the summer and fall months may yield locations of these missing lynx. Two of the lynx released in 2000 have probably slipped their collars. One of the male lynx released in 2003 has died from unknown circumstances.

Factors Affecting the Environment of the Canada lynx within the Action Area

Breckenridge Ski Area Improvements

Previously Approved but Unimplemented Project Elements

Several project elements from the 1998 and 2002 EAs (USFS 1998, 2002b) have been approved and are in various stages of implementation. These elements include additional snowmaking on several trails, the construction of the Peak 7 Restaurant at the top of the Independence SuperChair (which would not be built at that location under current proposed action), various trail improvements mountain-wide, the cabriolet gondola on Peak 9, the A Lift upgrade and extension, and the skier services facility at the top of the Peak 9 cabriolet gondola. These projects have been reviewed and approved in previous NEPA analyses, although some (those approved in 1998) may require implementation of additional mitigation to make them consistent with the revised Forest Plan. Therefore, details regarding project components and disclosed effects are not discussed further in this document, but with the required implementation of additional revised Forest Plan related mitigation they are considered as part of the existing environmental baseline.

White River Resort Special Use and Outfitter/Guide Permit Renewal

The project area is located within the South Fork White River LAU. A dense spruce-fir forest surrounds the resort on its south side. This forest has a relatively high density of snowshoe hares based on hare pellets observed during field inspection. This forest immediately adjacent to the resort is suitable lynx winter foraging habitat, but is unlikely to be used as denning habitat due to the summer presence of people at the resort.

Grazing occurs over roughly 3,000 acres with an average use of about 1 horse-month/27 acres. Horses are rotated between four pastures during the course of the season to prevent overgrazing. Both aspen and riparian willow habitats occur within the grazing allotment. No specific utilization surveys were conducted during the field review by the author. However, large amounts of tall, late seral willow areas are present along the South Fork near the resort area, and mature aspen clones are abundant on the south-facing hillsides throughout the drainage.

A variety of habitats occur in or near the outfitter guide areas and the camps. These include 1) aspen, 2) riparian wetlands and streams, 3) upland grasslands, 4) lodgepole pine, and 5) spruce/fir.

South Fork WR LAU (action area)	Baseline before action (acres)	Number of acres affected (action)	Net change (acres)	Percent of Habitat change
Denning Habitat (acres)	45,701	45,701	0	0
Winter Forage (acres)	4,547	4,540	(7)	0.1
Other lynx Habitat (acres)	11,082	11,082	0	0
Unsuitable (acres)	68	75	7	1
Total Habitat	61,398	61,398	0	0

Allen Creek Project

The Aldrich Lakes LAU does not have a very high percentage of lynx habitat, however the predominance of non-habitat is on the north side of the LAU. The Allen Creek Project is located on the south side of the Aldrich Lakes LAU, where the majority of lynx habitat is located. This project was chosen as an area to improve lynx habitat, because it is located in fairly close proximity to the North Fork of White River LAU. The Aldrich Lakes LAU has some of the best lynx habitat on the Blanco Ranger District. The Allen Creek area also has more lodgepole pine than other areas of the Blanco Ranger District, which allows for more opportunities to improve snowshoe hare habitat.

Aldrich Lakes LAU	Baseline before action (acres)	Number of acres affected (action)	Net change (acres)
Denning Habitat (acres)	5,365	5,365	0
Winter Forage (acres)	10,310	10,050	(260)
Other lynx Habitat (acres)	6,394	6379	(15)
Unsuitable (acres)	290	565	275
Total Lynx Habitat	22,359	22,359	0

Bailey, and Parker, Private Road Easements

Both projects are located within the Snake River LAU. This LAU includes the Snake River watershed and the Frisco Peninsula area. The Frisco Peninsula contains a developed Nordic ski area on NFS land and Town of Frisco land. Residential and government development occurs adjacent to the west side of the peninsula. There are two major downhill ski areas within the

LAU – Keystone and Arapaho Basin. In addition to the slopes at Keystone, there is an expansive base area and residential development along U.S. Highway 6. Immediately west of Keystone are the residential community of Summit Cove and the Keystone Golf Course. The Town of Montezuma occurs along the Snake River at the 10,400-foot level. There is much less development here than in the lower communities, but it occurs within prime spruce-fir habitat.

The project areas contain winter foraging and 'other' lynx habitat. Snowshoe hare are known to be in the vicinity of both areas; however, no site-specific hare surveys were done for this project. Neither of the project areas is within lynx linkage polygons or forested landscape linkages (Management Area 5.5). Both project areas are located entirely within the Snake River LAU.

The immediate area around both sites receives high recreational use during the summer and moderate winter use. Several trails, a Forest Development Road, residences, and the Summit County Commons (offices, library, maintenance yard, animal shelter, etc.) occur within ¼ mile of the Bailey property. The Summit County maintenance facility is within 1,000 feet of the Bailey project area. In the summer and fall, much dispersed camping occurs in the vicinity of Miner's Creek, to the west of the Bailey property.

All but the last 300 feet of the Bailey road easement is regularly compacted by winter recreational activities such as snowmobiling, cross-country skiing and snowshoeing. Those activities also occur on the other roads and trails in the vicinity. The 300 feet of road just prior to entering the private property may occasionally be compacted. Therefore, regular snow compaction occurs on almost the entire easement, plus within 300 feet to the north and west of the currently non-compacted segment. There is no doubt that competing predators such as coyote and bobcat already have access to this habitat via compacted snow routes. Canada lynx have already lost their competitive advantage in the project area.

At the Parker property, snow compaction regularly occurs along the Deer Creek Road by snowmobiles and skiers during the winter. Summit County currently ends its snow plowing near where Deer Creek flows into the Snake River and plows out a snowmobile trailhead there (approximately one mile south of Montezuma and 1,800 feet north of the project area). The private property to be accessed straddles the snow-compacted Deer Creek Road. At no point does any route to the potential home site exceed 300 feet distance from Deer Creek Road. There is no doubt that competing predators such as coyote and bobcat already have access to this habitat via the compacted snow route. Therefore, Canada lynx have already lost their competitive advantage in the project area.

The existing driveways through NFS land to the Parker property are not regularly compacted. The landowner has erected a yurt on this property, but Summit County has halted the construction. No one lives at the property at this time. Guided vehicle tours (e.g.: open Hummers) occur along Deer Creek Road during the summer months.

Derby Mesa Wildlife Prescribed Fire

Most of the proposed treatments areas are mapped as non-habitat for lynx due to the presence of ponderosa pine. Some areas of sagebrush and mixed shrublands, within 500 meters of Douglas-fir types, should be considered "other" (i.e. summer) habitat for lynx based on current lynx habitat definitions for the White River National Forest. Based on field evaluations, about ⅓ of Unit 6a (16 acres), ¼ of Unit 8 (13 acres) and all of Units 3a and 3b are considered "other" habitat for lynx based on the proximity of Douglas-fir cover types.

Derby Mesa Prescribed Wildlife Fire

Derby Mesa LAU	Baseline before action (acres)	Number of acres affected (action)	Net change (acres)	Percent of change (Lynx habitat)
Denning Habitat (acres)	10,244	10,244	0	N/A
Winter Forage (acres)	1,913	1,913	0	N/A
Other lynx Habitat (acres)	6,244	6,195	(49)	(.002)
Unsuitable (acres)	538	587	49	.002
Total LAU (acres) include non-habitat	53,090	53,090	53,090	N/A

The Derby Mesa Timber Sale is an ongoing vegetation treatment project on NFS lands, within the action area, that is scheduled to treat approximately 1,565 acres of ponderosa pine and Douglas fir. Most timber sale activity will not occur within lynx habitat, however approximately 515 acres of mixed Douglas fir forest, mapped as lynx winter foraging and denning habitat, will be affected by the action. The table above reflects the proposed action relative to baseline conditions, including the on-going Derby Mesa Timber Sale.

Little Box Project

Environmental Baseline Condition of Canada lynx Habitat.

Baseline Habitat Attributes of the Bar HL LAU								
LAU Name	National Forest Acres	Lynx Habitat Acres	Denning Habitat Acres	Winter Foraging Acres	Other Habitat Acres	Currently Unsuitable Acres	% of LAU that is lynx habitat	% Unsuitable
Bar HL	95,928	35,338	15,157	14,935	5,137	*109	35.6%	.3%

*This figure does not account for the harvesting of the Buford/New Castle blow-down, which will be completed in 2003.

The Buford/New Castle Project (previous section 7 consultation), which will harvest the majority of the blow-down from the 2000 wind event, affected a total of 436 acres of lynx habitat in the Bar HL LAU. The majority of these units had significant wind damage, with the resulting stand having very little remaining live canopy. Most of the salvage units are now considered unsuitable lynx habitat, until regeneration has grown to above snow level (15-25 years). It is estimated, that after the Buford/New Castle blowdown salvage operations, (December 2003), the amount of unsuitable lynx habitat in the Bar HL LAU will be at approximately 1.5 percent.

The portion of the Bar HL LAU where the Little Box Project area is located is a year-round, high-motorized use area on the Rifle and Blanco Ranger Districts. The project area is near the Buford/New Castle Road and the junction of three major Forest Roads (FR 245, FR 825, and FR 211). There is moderate to high levels of motorized traffic, including full-size vehicles and ATVs, in the summer, which becomes heavy during the fall big game hunting seasons. The entire area is also very popular for snowmobiles in the winter because of the large open parks, expansive terrain, and numerous access points. The Little Box Project area is located between Forest Roads 825 and 245, which run parallel to each other and, are approximately 1 mile apart. These two roads are main Forest Service access roads, and both are used extensively by snowmobiles until mid or late-April. Although lynx may be tolerant of moderate human activity, it would seem that the high levels of use this area receives would reduce the habitat effectiveness for lynx.

Markley Hut Reconstruction

The Markley Hut locations are situated in lodgepole pine stands. Vegetation in the understory includes vaccinium, kinnikinnik, elk sedge, woods rose, buffalo berry, hairy golden aster, cinquefoil, Letterman needlegrass, alpine bentgrass, American thistle, and mountain muhly. There is very little conifer regeneration in the understory of the even aged lodgepole stand in the project area.

The Markley Hut project area falls within the bounds of the Maroon Bells LAU. This LAU is 81,836 acres in size, with the majority located on NFS land. Within this LAU, the Forest Service has mapped 7,929 acres of lynx denning habitat, 5,283 acres of winter foraging habitat, and 12,618 acres of other habitat. A total of 26,482 acres considered to be lynx habitat, or 32.4 percent of the LAU. Only 2.5 percent of the LAU is currently considered unsuitable.

The area in the vicinity of the hut is mapped, in the White River Geographic Information System (GIS), as “other” lynx habitat, or travel habitat. Express Creek itself may provide some suitable foraging habitat, but coarse woody debris for denning and/or regeneration to provide habitat for snowshoe hares is distinctly lacking.

The Express Creek Road provides recreational access to the Hut vicinity to 4-wheel drive vehicles, bicycles, hikers, horses, and motorcycles during the summer. The Taylor Pass area is a favorite recreation site for locals and visitors alike. During the winter, use is restricted to cross country skiers. The Express Creek drainage is the site of numerous historic mines and mineral exploration holes. Most of the drainage was logged in the 1800s to support the mining industry. Human caused wildfires were common during the mining period, and the site was likely burned at that time also. There are no other major Federal, State, or private human activities common to the area.

Vail Ski Area 2003 Mountain Pine Beetle Control Timber Sale

The Vail Ski Area 2003 Mountain Pine Beetle Control Timber Sale is located within the Eagle Valley LAU. The total size of this LAU is about 97,646 acres of NFS lands of which 55,614 acres are considered lynx habitat. The Forest Service estimates that 26 percent of suitable lynx habitat in the Eagle Valley LAU is lynx denning habitat and only about 9 percent of the LAU is considered unsuitable habitat.

Lynx habitat components within the Eagle Valley LAU

Total acres (Forest Service Land)	Acres of Lynx habitat	Acres of "non-habitat"	Acres of unsuitable habitat	Acres of Denning	Acres Winter Foraging Habitat	Acres "other" habitat	Acres and percent affected by project	Total acres and percentage unsuitable habitat
97,646	55,614	42,033	4,939 (9 %)	14,245 (26 %)	18,895 (34 %)	17,535 (31 %)	319 (<1 %)	5,258 (10 %)

The project area may currently provide for east-west movement of lynx to the south of I-70 and the towns of Vail and Avon. Lynx traveling in this direction would have to cross through a ski area that receives very high recreational use. Limited evidence presented in the Science report (Ruggerio et al. 1999) indicates that such areas are not complete barriers to lynx movement, especially at night when human activities are at a minimum.

All of the proposed units and all other tree islands within the project area are skied through on a daily basis during the ski season (based on field review). None of the tree islands contain significant amounts of winter hiding cover as they are largely lacking in understory cover. None of the tree islands in the project area are sufficiently large enough to visually and/or acoustically insulate lynx from human activities. Given the lack of hiding cover, their relatively small size (less than 500 feet in width) and the frequent human intrusion into the islands from skiers, it is highly unlikely that any of the proposed units or other tree islands in the project area would provide winter diurnal security areas for lynx. In addition there is a large amount of human activity during the nighttime from people using Adventure Ridge at Vail. Downhill sledding, grooming activities and residents yelling, talking, and playing loud music in both parts of the proposed project areas all contribute to the unlikelihood of lynx using these areas.

In the summer the tree islands also contain little hiding cover for lynx and lie in close proximity to hiking and biking trails that receive heavy recreational use. The tree islands themselves would receive less human intrusion in the summer than in the winter, but frequent intrusions from people walking or biking off trails would be expected during the "non-ski" season. Therefore, the tree islands in the project area are not considered adequate to provide for diurnal security areas during summer months.

Frisco Nordic Center

The Snake River LAU currently has 40,762 acres of lynx habitat. Of the 40,762, only 5.5 percent of this LAU is in an unsuitable condition (see table below). A small temporary reduction of suitable habitat will occur as a result of this proposal (.08 percent of the LAU). Of the 40,762 acres of suitable lynx habitat within the Snake River LAU, 16 percent is denning habitat. This 16 percent denning habitat will not be affected by the Frisco Nordic Center project. The total amount of suitable lynx habitat converted to an unsuitable condition would be 32 acres (24.9 acres clear-cut + 6.72 acres trails) or 0.08 percent, an increase from 5.5 percent to 5.58 percent.

A breakdown of the Snake River LAU before and after the Frisco Nordic Center project

Total Acres in LAU	Acres of Lynx habitat	Acres of "non-habitat"	Acres of unsuitable habitat	Acres of Denning	Acres Winter/ Foraging Habitat	Acres "other" habitat	Acres and percent of lynx habitat converted to unsuitable by project	Total acres and percent unsuitable lynx habitat
64,640	40,762	23,878	2,244 (5.50 %)	6,609 (16 %)	17,714	14,195	32 acres (0.08 %)	2,276 acres (5.58 %)

The project area is located on a peninsula, which reaches into Dillon Reservoir. The peninsula is separated from adjacent habitat by the Highway 9 corridor, which is heavily traveled, especially during winter months. Highway 9 may act as a barrier to movement of lynx to the peninsula due to high traffic volumes.

The Peninsula Recreation Area provides year-round developed recreation opportunities on both NFS land and Town of Frisco land. Because of its scenic location and easy access from the Town of Frisco and Interstate Highway 70, the Peninsula Recreation Area receives considerable recreation use. During the winter, Town of Frisco concessionaires operate the Frisco Nordic Center and a dinner sleigh ride. Since many of the groomed Nordic ski trails, marked snowshoe trails, and a portion of the sleigh trail cross onto NFS lands, the Town of Frisco currently operates under a short-term special use permit from the Forest Service.

Approximately 20,000 visitor use days (ski and snowshoe) are recorded at the Nordic center each winter season. On NFS land, there are approximately 14.6 kilometers of groomed ski trails and 5.7 kilometers of foot-packed snowshoe trails. On Town of Frisco land, there are approximately 13.9 kilometers of groomed ski trails and 3.2 kilometers of foot-packed snowshoe trails.

The Peninsula Recreation Area is designated as Management Area 8.21 – Developed Recreation Complexes. In general, these areas contain developed recreation sites that provide an array of recreational opportunities and experiences in a forested environment. Recreation opportunities tend to occur in an intensively managed, highly regulated environment, modified to accommodate a high level of interaction among users. Vegetation communities are managed to provide an eye-pleasing appearance for visitors, complement the recreational values, and provide a variety of plant communities and structural stages. The majority of the peninsula contains dense stands of lodgepole pine. Many of these lodgepole pine stands are infected by dwarf mistletoe and have pockets of recently killed trees from mountain pine beetle activity. Small stands of aspen and spruce also occur on the peninsula. Lodgepole pines are encroaching and overtopping many of the aspen stands, causing a decrease in the amount of aspen on the peninsula. The majority of the peninsula consists of 'other' lynx habitat. Most of the peninsula is intermediate to mature lodgepole pine and the regenerating stands are few and isolated. The vast majority of the trees have crowns that have lifted beyond the reach of hares, even in deep snow years. Many of the regenerating pines have crowns that are showing signs of lifting. Snowshoe hares are present within the project area, although their numbers are very limited. Hare sign can be found in and near the regenerating lodgepole pine stands with low crowns.

Hare tracks have been seen near the highway on the south side of the peninsula. No site-specific hare surveys were done for this project. Information on Canada lynx habitat parameters was derived from Forest-wide GIS lynx mapping coverage developed in cooperation with the Service.

The project area is not included within any landscape linkages, and is not likely used as a travel corridor within the LAU. The project area is located in the Snake River LAU, but if a lynx ever did travel onto the peninsula, it would most likely come from the Swan River LAU. Except for the presence of Highway 9, the lynx habitat of the Swan River LAU is contiguous with that of the project area.

South Game Creek Land Exchange

The selected 2.71 acres of Federal property and the Mud Springs Parcels are in the Eagle Valley LAU. The Eagle Valley LAU contains 117,234 acres, of which 19,588 are non-Forest Service. Lynx habitat totals 47.4 percent of the LAU, 25.6 percent of the LAU is currently suitable as denning habitat, and 8.9 percent of the LAU is currently in unsuitable condition. The South Game Creek Parcel is located in the Camp Hale LAU. The Camp Hale LAU contains 68,325 acres, of which 8,436 are non-Forest Service. Lynx habitat totals 56.6 percent of the LAU, 19.7 percent of the LAU is currently suitable as denning habitat, and 3.2 percent of the LAU is currently in unsuitable condition.

Breakdown of the Eagle Valley LAU before and after land exchange

Total Acres	Acres of Lynx habitat	Acres of "non-habitat"	Acres of unsuitable habitat	Acres of Denning	Acres Winter/ Foraging Habitat	Acres "other" habitat	Acres and percent of lynx habitat converted to unsuitable by project	Total acres and percent unsuitable lynx habitat
117,234	55,569	42,033	4,946 (8.9 %)	13,892 (25.6 %)	18,895	17,535	0	4,943* (8.7 %)

Breakdown of the Camp Hale LAU before and after land exchange

Total Acres	Acres of Lynx habitat	Acres of "non-habitat"	Acres of unsuitable habitat	Acres of Denning	Acres Winter/ Foraging Habitat	Acres "other" habitat	Acres and percent of lynx habitat converted to unsuitable by project	Total acres and percent unsuitable lynx habitat
68,325	38,672	21,235	1,237 (3.2 %)	7,618 (19.7 %)	19,747	10,074	0	37,595* (2.8 %)

*This number includes the increase of suitable lynx habitat resulting from the acquisition of 120 acres in the Eagle Valley LAU and 160 acres in the Camp Hale LAU.

Project planning standards of the LCAS that pertains to land exchanges includes evaluating their effects on key linkage areas and maintaining habitat connectivity within or between LAUs. The Forest Service is currently in the process of identifying such linkage areas on the White River National Forest. However, the area from Avon to Georgetown along the I-70 corridor has been identified as a key landscape linkage area for north-south lynx movements in the Southern Rocky Mountain Geographic Area. The 2.71-acre Federal parcels border the western edge of this linkage area, while the 280-acre non-federal parcels are not within this landscape linkage and are believed to be important for north-south movement of lynx across I-70. This belief is based on their location to the I-70 corridor and the extensive amount of municipal and residential developments between the parcels. In addition, there is a lack of suitable habitat and wildlife underpasses in the vicinity of the I-70 corridor.

West Lake Creek Land Exchange

Parcels 1 (118.65 acres), 2 (10.05 acres), and A (124.3 acres) are located at the northern tip of the Sawatch Range, although all are below the continuous spruce-fir and lodgepole pine zone representing higher quality lynx habitat. Because of parcel location, habitats present, local physiography, and the distribution of human developments, it is likely that Parcel A provides more potential value to lynx than Parcels 1 and 2. Parcel A is located close to the Wilderness boundary, along the ecotone of upper elevation conifer forests, and relatively close (i.e., within approximately 3 miles) to alpine spur ridges representing significant restrictions to east-west lynx movements north of the Sawatch Range. Ridges and creeks present on and leading to Parcel A could also direct lynx onto the parcel. Habitats on Parcel A contain suitable forest structure for denning, but are not effective because of their small, size and fragmented location away from higher quality, extensive denning habitat. However, forests on Parcel A could provide opportunistic foraging habitat, diurnal security habitat, and travel values as part of a resident's home range or for dispersing lynx that

might be more common than expected in this east-west linkage zone at the northern end of the Sawatch Range. With the exception of the 17.4-acre meadow, all remaining habitats on Parcel A (106.9 acres) support suitable lynx habitat following current Forest Service habitat criteria.

Parcels 1 and 2 share some of Parcel A's attributes. First, although West Lake Creek Road, some adjacent residences, and private lands virtually surround these parcels, residential density and activity are low. As such, habitat values on these Federal lands are not that encumbered by human activity effects, although the parcels are not as isolated, particularly in winter, as Parcel A. The West Lake Creek riparian corridor and its flanking ridges are physiographic features that could also conduct lynx onto this parcel.

Using current habitat parameters, Parcel 1 contains 53.4 acres of "non-habitat", 47.5 acres of "other habitat", and 17.8 acres of "winter habitat". Parcel 1 contains no lynx denning habitat. The mountain shrub and riparian habitat on this parcel represents potential "other" lynx foraging habitat. The mature aspen stands atop the eastern ridge, that do not have conifers invading their understory, represent non-habitat. Therefore, the acreage of suitable lynx habitat on Parcel 1 is somewhat less than the parcel's 118.65 acres, and for the purposes of this analysis will be 65.3 acres. Parcel 2 meets current criteria as lynx denning and winter foraging habitat, although denning values are not likely effective. Just considering Parcels 1, 2, ands A, the proposed exchange would result in a net gain of 31.55 acres of lynx habitat to NFS lands. For similar human activity reasons, diurnal security values on Parcel 1 are probably less effective than those on Parcel A. Lastly, these potential lynx habitat values, further away from the higher value spruce-fir and lodgepole zones and further into the human development matrix may make it less likely that lynx would travel through Parcels 1 and 2 vs. Parcel A, as either part of a home range or by transient animals. Parcel B (31 acres) is above tree line and largely confined to a rugged alpine cirque that does not support suitable lynx habitat values.

The area from Avon to Georgetown along the I-70 corridor has been identified as a landscape linkage area for north-south lynx movements in the Southern Rocky Mountain Geographic Area. The project area containing some Eagle County exchange parcels borders the western edge of that general linkage area. However, the specific locations of the exchange parcels are not important for north-south movement of lynx across I-70 because of their distance away from I-70, extensive municipal developments along the highway in the vicinity of the parcels, the absence of suitable habitat and underpasses (i.e., lack of habitat connectivity) in the vicinity of the parcels, and the barrier imposed by I-70. Studies indicate that highways with 4,000 or more vehicles a day in conjunction urbanization may be serious obstacles to lynx movement (Ruediger et al. 2000). The critical area for north-south crossing of I-70 is the area from Timber Creek (west of Vail Pass) to Guller Creek (east of Vail Pass), where large urban centers do not exist and where habitat connectivity is best. That area begins approximately 2 miles east of the East Vail interchange (approximately 5 miles southeast of Parcel B) and approximately 15 miles east of Parcels A and 1.

Parcel C (148.216 acres) is composed of "other habitat," "non-habitat," "winter foraging habitat," and "denning habitat," in that relative order. As part of a complex, the denning habitat on the Mount Hope and Golden Champion Claims could be functional as denning habitat. Some of these habitats would also be functional as diurnal security habitat. While it is unclear if Parcel C will be considered to be within a landscape linkage, this parcel's location, and habitats on it, are potentially important for lynx movements. Forest habitat connectivity over the Continental Divide at Independence Pass is fragmented and discontinuous. However, willow stands that may also facilitate lynx movements are nearly continuous over the pass. Parcel C also supports adequately continuous forest and shrub cover extending north out of the Roaring Fork drainage that is contiguous with similar cover extending up Lost Man Creek and over South Fork Pass into the Fryingpan River drainage. Evidence of resident lynx have been found in the Fryingpan drainage and in the portion of the upper Roaring Fork containing Parcel C in the recent past (Terrill 1971, Halfpenny et al. 1982). Furthermore, some of the augmented lynx are thought to have used the west slope of the Sawatch Range (which contains the Fryingpan) for extended northward movements. Therefore, habitats present on Parcel C are considered to be potentially important for local lynx movements within the drainage and for landscape level movements between drainages and LAUs.

Three separate LAU's will be affected by the project, baseline condition, and effects of the proposed action relevant to each LAU are displayed in the following tables.

West Lake Creek Land Exchange

Eagle Valley LAU	Baseline before action (acres)	Number of acres affected (action)	Net change (acres)	Percent of total acres post project
Denning Habitat (acres)	14,245	31	(31)	25.6
Winter Forage (acres)	18,895	0	0	34
Other lynx Habitat (acres)	17,535	0	0	31.5
Unsuitable (acres)	4,939	0	0	8.9
Total lynx Habitat	55,614	0	0	N/A

West Lake Creek Land Exchange

Independence Pass LAU	Baseline before action (acres)	Number of acres affected (action)	Net change (acres)	Percent of total acres post project
Denning Habitat (acres)	16,701	0	0	34.1
Winter Forage (acres)	10,218	19	19	20.9
Other lynx Habitat (acres)	21,899	61	61	44.8
Unsuitable (acres)	85	60	(60)	0.3
Total lynx Habitat	48,903	130	130	N/A

West Lake Creek Land Exchange

Brush Creek LAU	Baseline before action (acres)	Number of acres affected (action)	Net change (acres)	Percent of total acres post project
Denning Habitat (acres)	21,113	0	0	38.1
Winter Forage (acres)	12,918	15	15	23.3
Other lynx Habitat (acres)	14,924	64	64	27.0
Unsuitable (acres)	6,361	61	61	11.5
Total lynx Habitat	55,316	106	106	N/A

Woods Lake Hydroelectric Project

The following table displays the current status of lynx habitat within the Fryingpan North LAU, which include past actions that have affected the LAU.

Woods Lake Hydroelectric Special Use Permit Renewal

Fryingpan North	Baseline before action (acres)	Number of acres affected (action)	Net change (acres)	Percent of total habitat post project
Denning Habitat (acres)	23,982	0	0	42
Winter Forage (acres)	16,691	0	0	29
Other lynx Habitat (acres)	16,882	0	0	29
Unsuitable (acres)	199	0	0	0.3
Total lynx Habitat	57,754	N/A	N/A	N/A

Missionary Ridge Burned Area Timber Salvage Project

Past timber harvests have affected the current status of snowshoe hare habitat in terms of seedling/sapling presence in the understory of currently existing mixed conifer stands. Timber harvests and fire suppression have affected lynx habitat on private and public lands within the area. Fire suppression has perpetuated homogenous forest conditions that lack the varying age class characteristics of preferred habitat. The MRF has fragmented lynx habitat through the creation of large openings and the conversion of older forest stands (potential denning habitat) into early succession stages. The fire has also likely altered habitat conditions for favored prey species such as snowshoe hair and red squirrel. Low intensity fires are important in creating a mosaic of structural conditions and maintaining forest health suitable for lynx and its prey base.

Post-fire and post-timber harvest conditions of each LAU within the Missionary Ridge Post-fire Timber Harvest.

LAU	Acres in LAU	Acres of Lynx habitat	Acres of "non-habitat"	Acres of unsuitable habitat	Acres of Denning	Acres Winter & Foraging Habitat	Acres "other" habitat	Acres and percent of lynx habitat converted to unsuitable by project	Total acres and percent unsuitable lynx habitat
Animas	69,929	42,821 (61%)	27,108 (39%)	1,956 (5%)	14,786 (21%)	7,287 (10%)	18,792 (27%)	1,610 (4%)	3,566 (8%)
Bear Creek	47,827	30,712 (64%)	17,115 (36%)	1,557 (5%)	8,879 (19%)	6,218 (13%)	14,058 (29%)	748 (2%)	2,305 (8%)
Upper Florida	29,416	19,246 (65%)	10,170 (35%)	337 (3%)	10,445 (36%)	1,464 (5%)	7,000 (24%)	495 (3%)	832 (4%)
Upper Los Pinos	84,652	No Change (NC)	NC	NC	NC	NC	NC	NC	NC
Vallecito Creek	60,034	NC	NC	NC	NC	NC	NC	NC	NC

*Discrepancies between the "Acres of Lynx Habitat" in the table above and the 3 tables below are attributed to improvements in mapping techniques. Table 1 is more recent and accurate.

A break down of the past present and future conditions of the LAUs affected by the proposed project is presented in following table. Conditions of these LAUs prior to the MRF are presented in the subsequent tables.

Although the San Juan National Forest does not presently have any plans for future timber harvests, there is the potential. As fatally injured trees die, Forest Service biologists will evaluate the need for removing these trees. As natural succession within the burn area progresses, including those areas harvested, unsuitable lynx habitat will return to suitable conditions. Falling snags in burned areas and the regeneration of aspen and conifers will eventually provide the necessary components for snowshoe hare and lynx denning habitat.

Breakdown of the Animas, Upper Florida River, and Bear Creek LAUs prior to the Missionary Ridge Fire.

ANIMAS LAU-21307	ACRES
Total LAU Acres	70145
Total Denning Habitat	16697
Winter Foraging Habitat	8711
Total Winter Foraging Habitat (Includes Denning and Winter Foraging)	25409
Total Other Habitat	16495
Total Suitable Habitat	41903
Total Currently Unsuitable Habitat	1366
Total Non Habitat	26876
Percent Unsuitable Habitat Within LAU	3

UPPER FLORIDA RIVER LAU-21309	ACRES
Total LAU Acres	29543
Total Denning Habitat	10566
Winter Foraging Habitat	1694
Total Winter Foraging Habitat (Includes Denning and Winter Foraging)	12260
Total Other Habitat	6559
Total Suitable Habitat	18819
Total Currently Unsuitable Habitat	428
Total Non Habitat	10296
Percent Unsuitable Habitat Within LAU	2

BEAR CREEK LAU-21310	ACRES
Total LAU Acres	46405
Total Denning Habitat	11395
Winter Foraging Habitat	8732
Total Winter Foraging Habitat (Includes Denning and Winter Foraging)	20127
Total Other Habitat	9929
Total Suitable Habitat	30056
Total Currently Unsuitable Habitat	454
Total Non Habitat	15894
Percent Unsuitable Habitat Within LAU	2

Burned Area Emergency Rehabilitation (BAER): Burned area emergency rehabilitation was initiated immediately after the fire was contained and continues to date. BAER work provides short-term mitigation to the fire's effect. Mitigation included seeding, felling of dead trees along the contour to trap eroding soil, resizing or removal of culverts, installation of drain dips on roads, installation of drainage controls, bridges and log trail supports on trails. To reduce the possibility of injury to humans and protect property, rehabilitation measures have targeted high-risk areas (high fire severity, steep slopes, and erodable soils) within the fire perimeter.

Millswitch Vegetation Management Project

The Millswitch diversity unit is contained entirely within the Chester LAU. More than half of the Millswitch diversity unit (6,106 acres) is located within the proposed Poncha lynx linkage area. Habitat components within the Chester LAU include lynx denning, winter forage, unsuitable, non-habitat and other lynx habitat are displayed in the following table.

Lynx Habitat within the Chester LAU and Poncha Linkage Area before and after the Millswitch Vegetation Management Project

Total acres	Acres of Lynx habitat	Acres of "non-habitat"	Acres of unsuitable habitat	Acres of Denning	Acres Winter Foraging Habitat	Acres "other" habitat	Acres and percent affected by project	Total acres and percentage unsuitable habitat
Chester 52,225	41,977	9,407	850 0.02 (%)	17,443 33.4 (%)	3,580	20,945	161 0.004 (%)	1,011 2.3 (%)
Poncha Linkage Area 6,106	5,468	638	0	3,522 57.7 (%)	268	1,678	89 1.6 (%)	89 1.6 (%)

Past timber harvests have contributed to the vegetative patterns that exist today. Sawlog material, houselogs and mining props were provided from Millswitch during the early 1900s. In the late 1970s, a timber sale (known as the Old Millswitch Timber Sale) was conducted. Database records indicate that 874 acres were treated at that time. Over the next 20 years another 330 acres outside the diversity unit were treated on the adjacent San Isabel National Forests. Proposed activities will treat those previously treated acres within the Millswitch area. The proposed Millswitch timber sale would harvest up to 1,425 acres of timber. There are no known future vegetative treatment proposals on the San Isabel and Rio Grande National Forest's immediately adjacent to the Millswitch diversity unit.

There are a total of 27.2 miles of open roads within the 10,898-acre diversity unit. Another 2.57 miles of road are closed to full size vehicles but open to ATVs and motorcycles. Overall open road density is calculated at 1.6 miles per square mile. Trails in the diversity unit total 6.05 miles, 3.71 on which some motorized use is allowed. Motorized recreation with full size vehicles, motorcycles, ATVs, and snowmobiles occurs in the diversity unit with heavy use seen

during the big game hunting season and regular snowmobile use on permitted, groomed trails in winter. The main access route into the diversity unit is the Marshall Pass Road.

Recreational activities within the diversity unit, occurring in the summer, fall, and winter, include 2-wheel and 4-wheel drive vehicle driving; ATV, motorcycle and mountain bike riding; firewood gathering; dispersed camping; backpacking; hiking, hunting, and fishing. Snowmobiling occurs throughout the diversity unit with primary use on permitted, groomed trails up the Marshall Pass road and in the Millswitch Creek drainage. The Marshall Pass Road corridor and the co-located Colorado and Continental Divide Trails receives the majority of recreational use with heavy summer trail use by mountain bikers, hikers and motorcyclists. Lightly dispersed camping occurs during the summer with heavy dispersed camping use in the fall during hunting season.

Historically, fire has played a role in establishing and shaping many of the stands within the Millswitch Diversity Unit. The bulk of the conifer types (lodgepole pine and spruce –fir) had infrequent fire regimes with the lodgepole pine having surfaces fires on a 70-90 year return interval and a stand- replacing event on a 180 to 260 year interval. The spruce-fir had little surface fire occurrence and a stand-replacing event took place on a 250 to 400 year interval. In both types, this interval could have been shorter if another disturbance regime occurred first (windthrow, insect outbreak). The other vegetation types found in the area include aspen and open parks and meadows dominated by grasses and some brush (sagebrush, bitterbrush, serviceberry, snowberry, etc.). Native Americans ignited fires in these types more often since these were areas preferred by game animals. Low intensity surface fires were in the 10 to 40 year frequency. Occasionally, one of these surface fires would move up into the lodgepole pine and spruce-fir. European settlement reduced these intervals by domestic livestock grazing and the extirpation of Native Americans. The railroad has also contributed to the alteration of the fire regime and is responsible for igniting numerous fires on Marshall Pass. Anecdotal evidence of large, long lasting fires exists from the 1910s and 1920s. Fire frequency and size have declined greatly since the abandonment of the rail line in 1953. Prescribed broadcast burns occurred on the west side of Marshall Creek in 1983 and 1999 and north of Millswitch Creek in 2000.

The Millswitch project area is located within the Agate Grazing Allotment which includes portions of the Agate Creek, Marshall Creek, and Tomichi Creek watersheds and is bounded roughly by Mount Peck to the north, the Cow Creek, Sargents area, and Deadman's Creek to the west, with the Continental Divide to the east and south. At present, grazing on the allotment follows a 14 pasture deferred rotation system with 257 cow/calf pairs permitted. Season of use is from June 1 – September 30. Generally the herd is split with about 200 pairs grazing the Marshall portion and the remainder grazing the Agate portion of the allotment. The Millswitch diversity unit contains most of the Millswitch pasture and part of the Chester pasture from this allotment. The Millswitch pasture is in "resource protection nonuse" (no grazing) until the upper reach of Millswitch Creek and its tributaries show an improvement in willow canopy cover and adjacent upland meadows reach a mid-seral or better ecological condition. Heavy elk use in

combination with cattle grazing in the Millswitch pasture has resulted in deterioration in riparian and meadow condition.

With the exception of the Millswitch pasture, current management has largely benefited upland and riparian vegetation. Both riparian and upland range conditions are in a "steady upward trend". Riparian condition along Marshall Creek and its tributaries has reached an upper mid-seral ecological condition over an estimated 80 percent of the watershed. Upland vegetative conditions have shown similar improvements with improved forage productivity, species diversity and reduced dominance by big sagebrush.

Ongoing and future activities within Chester LAU include approximately 34 acres of lodgepole pine near the Pinnacle Mine and 764 acres of shelterwood/group selection harvest in lodgepole pine and spruce/fir in the Sawmill Park Timber Sale currently being harvested and 35 acres planned for future harvest. Activities associated with the Pinnacle Mine in the Indian Creek drainage are not expected to further impact lynx habitat. Future activities within the Poncha linkage area include approximately 1000 acres of salvage in ponderosa pine habitat on the Pike and San Isabel National Forest.

Snowshoe and Ruby Grazing Allotment Permit Renewals

The action area includes the Anthracite LAU and the Beckwith LAU. Within the Snowshoe and Ruby allotments, the areas remaining in poor condition are mostly grass meadows, which make up one percent of the total area of the allotments.

Breakdown of the Anthracite and Beckwith LAUs and affects from the Snowshoe and Ruby grazing allotments

LAU	Total acres in LAU	Acres of Lynx habitat	Acres of "non-habitat"	Acres of unsuitable habitat	Acres of Denning	Acres Winter Foraging Habitat	Acres "other" habitat	Acres and percent affected by project	Total acres and percentage unsuitable habitat
Anthracite	34,833	14,808	20,025	0	4,700 31 (%)	2,776	7,332	0	0
Beckwith	76,850	39,891	36,959	0	15,144 38 (%)	1,981	22,766	0	0

Galloping Goose Trail

The proposed project is located within the Matterhorn LAU. The Lynx Conservation Assessment and Strategy recommends a standard of no greater than 30 percent of the total lynx habitat in an LAU should be unsuitable. The LCAS also recommends that, at a minimum 10 percent of the total lynx habitat should be denning habitat. The following table provides a breakdown of the various components of the Matterhorn LAU. The Forest Service is adhering to the aforementioned standards of the LCAS. Denning habitat makes up 52 percent of the lynx habitat and only 2.7 percent is unsuitable. The construction of the trail will affect less than 1

percent (0.00007) of lynx habitat. Post trail construction will leave 52 percent of lynx habitat as denning and 2.7 percent unsuitable.

Breakdown of the Matterhorn LAU before and after the construction of the Galloping Goose Trail

Total Acres in LAU	Acres of Lynx habitat	Acres of "non-habitat"	Acres of unsuitable habitat	Acres of Denning	Acres Winter/ Foraging Habitat	Acres "other" habitat	Acres and percent of lynx habitat converted to unsuitable by project	Total acres and percent unsuitable lynx habitat
45,265	23,177	22,088	0	12,243 52 (%)	3,021	7,913	<3 acres 0.00007(%)	<3 acres 0.00007(%)

The Nature Conservancy's Small Tracts Acquisitions

Breakdown of the Matterhorn LAU before and after the Nature Conservancy's Small Tracts Acquistion

Total acres in LAU	Acres of Lynx habitat	Acres of "non-habitat"	Acres of unsuitable habitat	Acres of Denning	Acres Winter/Foraging Habitat	Acres "other" habitat	Acres and percent of lynx habitat converted to unsuitable by project	Total acres and percent unsuitable lynx habitat
45,265	23,177	22,088	0	12,243 53 (%)	3,021	7,913	<1 0.00002 (%)	<1 0.00002 (%)

James Lucas Small Tracts Act/Land Interchange Project

The National Forest parcel is identified as lynx winter foraging habitat within the Clear Creek LAU. According to the Summary of LAUs for Arapaho and Roosevelt National Forests (October 7, 2002), 41 percent of the Clear Creek LAU is lynx habitat. Lynx foraging habitat comprises 28 percent of the lynx habitat in the LAU. The 0.71-acre parcel contains lynx foraging habitat but currently does not contain denning habitat. The understory vegetation is sparse but the parcel has some young saplings and overhanging branches near the ground that would provide cover for small prey. The lynx foraging habitat within the National Forest parcel is satisfactory as it does contain sufficient habitat for snowshoe hares and other small prey. The cabin is used year-round by the private landowner and the Mill Creek Road is used daily by people commuting to their year-round homes north of the parcel.

Existing Conditions/Environmental Baseline for Lynx Habitat within the Clear Creek LAU

HABITAT	Clear Creek LAU
Total Acres	94,884
Capable (F+D+O+U)	41,749 (44.0%)
Suitable (F+D+O)	39,697 (41.8%)
Foraging	26,222 (27.6%)
Denning	10,009 (10.2%)
Unsuitable	2,052 (2.1%)
Non-habitat	39,439 (41.6%)
Other lynx habitat	3,466 (3.7%)

F = foraging habitat, D = denning habitat, O = "other" habitat, U = unsuitable habitat

Sheep Creek II Vegetation Management Project

The Sheep Creek II project area (29,477 acres) falls entirely within the Red Feather Lakes LAU (LAU, 106,960 acres). The current road density is 1.8 miles of road per square mile of forest. The project area comprises approximately 25 percent of the LAU. The project area is not located in or near any landscape linkage areas. Reintroductions of lynx were initiated in 1999 and 2000 in the San Juan Mountains and additional releases were conducted in April 2003. The Colorado Natural Heritage Database has one 1994 sighting of a lynx on the Canyon Lakes Ranger District. No district level surveys have been conducted and no protocol to do so exists.

Existing conditions/environmental baseline for lynx habitat within the Red Feather Lakes LAU and the Sheep Creek II project area

HABITAT	RED FEATHER LAU	SHEEP CREEK II
Total Acres	106,960	29,477
Capable (F+D+O+U)	100,190	11,966
Suitable (F+D+O)	82,417 (82%)	10,978 (92%)
Foraging	44,435 (44%)	8,916 (75%)
Denning	22,355 (22%)	1,716 (14%)
Unsuitable	17,773 (18%)	988 (8%)
Non-habitat	6,336 (6%)	645 (5%)
Other lynx habitat	15,626 (16%)	346 (3%)

Capable habitat combines foraging, denning, unsuitable, and other lynx habitats to determine what is able to support lynx populations. The project area contains 11,966 acres of capable habitat, all of which is concentrated in the south central to southwestern portion of the project area. The LAU contains 100,190 acres of capable habitat.

Suitable habitat is made up of foraging, denning, and other lynx habitats. Based on denning, foraging, and other habitat, the Sheep Creek II project area has approximately 10,978 acres (92 percent) of suitable habitat. The LAU has 82,417 acres (82 percent) of suitable habitat.

Foraging (F) habitat (8,916 acres or 75 percent) is also concentrated in the south central to southwestern portion of the project area with an additional area (included in the 8,916 acres above) extending along the project boundary to the southeast. Since the snowshoe hare is the primary prey source, it is important for lynx foraging areas to contain stands with characteristics that support hares (early successional forests with high densities of stems and branches that protrude above snow levels). Habitat for alternate prey species (squirrels, mice, beaver, etc) is available in the form of down woody debris, ponds, meadows, forested stands, and rock outcroppings. The LAU has 44,435 acres (44 percent) of forage habitat, including forage habitat on Federal (42,682 acres), State (69 acres), and private (1,684 acres) lands.

Denning (D) habitat (1,716 acres or 14 percent) within Sheep Creek II is again concentrated in the south central to southwestern portion of the project area, with an isolated patch in the southeast corner of the project area. The isolated patch is surrounded by forage habitat so it is suspected to provide denning habitat despite its isolation. These 1,716 acres are considered denning due to the mature forest characteristics (large diameter trees, down woody debris, available forage, etc.) they display. The LAU has 22,355 acres (22 percent) of denning habitat, 22,306 on Federal lands and 49 acres on private lands. No denning habitat occurs on State lands. Guidelines within the LCAS require that denning habitat be maintained at a minimum of 10 percent of capable habitat within the LAU. Currently, the Red Feather LAU is 22 percent denning habitat.

Other (O) habitats are those areas considered to be of "lesser quality" than forage or denning habitat, but still are usable (i.e., suitable), primarily for foraging. The Sheep Creek II area contains approximately 346 acres (3 percent) of Other lynx habitat. The LAU contains 15,626 acres of "Other" habitat, 177 acres of private lands and 15,449 acres on Federal lands. No Other habitat exists on State lands.

Unsuitable (U) habitats are those areas that are currently unsuitable for supporting lynx but have the potential to become capable lynx habitat. The project area has 988 such acres (8 percent) made up of grasses and forbs. Unsuitable habitats can be found on 17,773 (18 percent) acres of the LAU and this includes Federal (17,094 acres), State (7 acres), and private (672 acres) in-holdings. The LCAS planning standards indicate that if more than 30 percent of the lynx habitat within an LAU is currently unsuitable, no further reduction of suitable conditions is to occur. The Red Feather LAU currently has 17 percent of its lynx habitat in an unsuitable condition, above the 30 percent maximum.

Non-habitat areas are currently, and likely never will be, capable of supporting lynx. These areas comprise 645 acres (5 percent) in Sheep Creek II and may include roads, bodies of water, rocks, open areas, and those areas under 9,000 feet elevation. Non-habitat within the LAU can be found on Federal (6,188 acres), State (23 acres), and private (125 acres) lands, for a total of 6,336 acres.

Additional Project Area Information: The majority of the project area is lodgepole pine (20,360 acres) and most denning (1,716 acres or 14 percent) and foraging (8,916 acres or 75 percent)

habitat is found within these stands. Spruce-fir may be found on approximately 870 acres of the project area with 731 of those acres in mature condition. Lodgepole pine occurs on 20,360 acres with age classes from sapling pole (13,219 acres) to mature (6,510 acres). Aspen occupies 597 acres within Sheep Creek II and ranges from shrub/seedlings (3 acres) to saplings (494 acres) to mature (101 acres).

La Manga Beetle Salvage Sale

The La Manga project area (approximately 550 acres) falls within the Rito-Archuleta LAU (87,002 acres) and the Victoria-Chama LAU (70,978 acres). Eighty-five acres of the project are located in the Rito-Archuleta LAU and 430 acres fall in the Victoria-Chama LAU. The project area is not located in or near any key linkage areas. This area is within or adjacent to a previous timber sale, the La Manga Timber Sale. Estimated volume is approximately 100-300 MBF and approximately 25-50 cords of firewood. The area is composed of Engelmann spruce and subalpine fir. No species-specific surveys were conducted for this project. However, if lynx habitat is present, occupancy is assumed.

There is one ongoing vegetation management project, Grouse Timber Sale, in the Rito-Archuleta LAU. This project is potentially treating up to 670 acres of lynx habitat (650 acres of denning and 20 acres of other habitat). Other vegetation management projects within the Rito-Archuleta LAU that are planned within the foreseeable future include the Spruce Hole (portions of the Spruce Hole timber sale also occur in the Victoria-Chama LAU), El Lobo/Jarosa, Massey Gulch, and Trujillo Meadows timber sales. Within the Rito-Archuleta LAU, these projects combined (Grouse, Spruce Hole, El Lobo/Jarosa, Massey Gulch, Trujillo Meadows, and La Manga) propose vegetation treatments on up to about 2,111 acres.

In the Victoria-Chama LAU, the Spruce Hole timber sale is the only known potential timber project, other than the proposed sale, La Manga. The Spruce Hole sale has the potential to affect up to about 166 acres of lynx habitat. Currently about 118 of these acres are modeled as denning habitat and about 27 acres of unsuitable habitat. Less than 1 acre of "other" and "winter" habitat occurs within the project area, as well as about 20 acres of "non-habitat".

In addition to the Federal lands located in the project area, there are 830 acres of non-federal land in the Victoria-Chama LAU and 7,042 acres of non-federal land in the Rito-Archuleta LAU.

In the Rito-Archuleta LAU, the La Manga project has the potential to affect up to about 85 acres of lynx habitat. Currently about 8 of these acres are modeled as denning habitat, 56 are considered unsuitable, 5 acres of "other" habitat and 16 acres of "non-habitat" also occur within the project area. No winter habitat occurs within this area. In the Victoria-Chama LAU, the La Manga project has the potential to affect up to about 430 acres of lynx habitat. Currently about 55 of these acres are modeled as denning habitat, 366 are considered unsuitable lynx habitat, 1 acre each of "other" and "winter" habitat, as well as about 7 acres of "non-habitat". In both LAUs, canopy closure within the project area is opening as a result of beetles killing trees, but would be substantially more open as these trees are removed from the site. Implementation of

the project has the potential to degrade denning habitat and limit foraging habitat until regeneration occurs. By opening up the canopy in denning habitat, the habitat would be converted to winter habitat, which requires less canopy closure. Winter and other lynx habitat would not be impacted to the point where this habitat no longer functions as winter or other habitat

La Manga

Rito-Archleta LAU	Baseline before Action (acres)	Number of acres Affected	Net change (acres)	Percent of Habitat change
Denning Habitat (acres)	14,019	8	-8	-0.06%
Winter forage (acres)	5,583	0	+8	+0.14%
Other lynx Habitat (acres)	16,556	5	-5	-0.03%
Total LAU (acres) including non-habitat	87,002	85	85	0.10%

Victoria-Chama LAU	Baseline before Action (acres)	Number of acres Affected	Net change (acres)	Percent of Habitat change
Denning habitat (acres)	15,087	55	-55	-0.36%
Winter forage (acres)	9,895	0	+55	+0.56%
Other lynx Habitat (acres)	15,272	1	-1	-0.01%
Total LAU (acres) including non-habitat	70,978	430	430	0.61%

Buffalo Pass Campground – Tres Cabras Timber Sale

The Project area (164 acres) falls entirely within the Bonanza-Cochetopa LAU (155,283 acres). The project area is not located in or near a landscape linkage area.

The project area consists of two different habitat types. The units 1 and 2, which surround the Buffalo Pass Campground, consist of 131 acres of mixed ponderosa pine, Douglas fir, spruce and aspen. The understory consists of juniper, grass, forbs and shrubs typical of well-drained soils on the District. Most of the limited aspen clones within these two units are in serious decline due to conifer succession. Portions of the stands were harvested in the 1960s with what appears to have been a shelterwood cut. Existing road use is planned for log removal with the construction of one temporary road for log extraction, followed by its rehabilitation. The campground receives many visitors during the summer months, which hike the surrounding area. The

presence of the campground, in addition to past logging activities, have all had an impact on the project area's wildlife value. Unit 1 contains 95 acres classified as winter foraging habitat, which in reality is 52 percent ponderosa pine. In addition, unit 2 consists of 24 acres currently classified as unsuitable, which meets the criteria as other (summer) lynx habitat.

The existing mid-successional seral stage and proximity to the campground have combined to lower the project area's current value as winter foraging habitat, but it does contain limited numbers of alternate prey species such as squirrels and jackrabbits.

The third or Tres Cabras unit is 33 acres of mature ponderosa pine with some Douglas fir, spruce and bristle cone pine. Understory consists of grasses, forbs, and limited shrubbery. All three units of the sale area are dry, moderately sloped sites with only limited spring run off. The Tres Cabras unit is completely surrounded by roads, part of which are hardened and the remainder a two-track. The unit has been previously thinned and is currently experiencing some fuel wood harvesting of bug-killed trees along the road on approximately one third of the unit. The recreational two-track will also be used for log removal.

The Tres Cabras project area (unit 3) has undergone a thinning harvest in the past. Currently the stand is dominated by ponderosa pine (60 percent), with an open park like appearance. Even though a majority (28 acres) of this sale unit is currently classified as lynx winter foraging habitat, an on-site inspection by the district wildlife biologist resulted in determining the area currently far exceeds the <10 percent pine required for this classification. The site also consists of a small section (6 acres) mapped as non-lynx habitat, but actually meets winter foraging habitat criteria.

An on-the-ground review of the project area documented several differences between mapped and actual lynx habitat classification. All three units required some reclassification of lynx habitat before project effects could be determined. The existing condition data reflect changes to the Bonanza-Cochetopa LAU resulting from the North Park prescribed fire treatment. The first half of the North Park Salvage prescribed burn was completed on October 20, 2001 (123 acres). The remainder of the project area remains untreated due to dryer than normal environmental conditions and it is unknown when the remaining burn will be completed. An updated project review will take place when the rest of the burn is expected to occur.

Following these corrections the project activities were then analyzed for the expected condition resulting from the proposed project.

In the Bonanza-Cochetopa LAU, the Project has the potential to affect up to about 164 acres of lynx habitat. Currently, none of these acres are modeled as denning habitat, 123 acres winter habitat, 24 'other', and 17 are non-habitat. In the LAU, canopy closure within the project area would substantially open as trees are removed from the site. Implementation of the project has the potential to degrade winter habitat and unsuitable habitat until regeneration occurs.

Buffalo Pass

Bonanza-Cochetopa LAU	Baseline before Action (acres)	Number of acres Affected	Net change (acres)	Percent of Habitat change
Denning Habitat (acres)	23,973	0	0	0.00%
Winter forage (acres)	36,960	6	-6	-0.02%
Other lynx Habitat (acres)	33,564	24	-18	-0.05%
Total LAU (acres) including non-habitat	155,283	205	0	0.00%

Known past and/or current activities on state and private lands occur on non-habitat, and include two cabins and one fuels reduction project. The two cabins impact approximately one acre each, and both are within non-habitat areas. The fuels reduction project occurred in mixed conifer areas of private property that are GIS mapped as a combination of non-habitat and denning habitat. Recent ground-truthing of lynx habitat in the LAU indicates this private property area does not contain denning habitat, as it is approximately 50 percent pine, making it all non-habitat.

Federal lands, non-federal lands, and combined Federal and non-federal lands.

Bonanza-Cochetopa LAU	FEDERAL LAND	NON- FEDERAL LAND	COMBINED LANDS
Total acres of lynx habitat	100,443	4,869.53	105,312.53
Total suitable acres	94,590 (94%)	2,570.03 (53%)	97,160.03 (92%)
Total unsuitable acres	5853 (5.8%)	10.09 (0%)	5863.09 (5.6%)

Specific location information is unavailable from the CDOW for lynx on the Rio Grande National Forest. While there have been no reported observations in the project area nor have surveys of the project sites produced any sightings or track observations, lynx are known to travel through the general vicinity.

Spruce Hole Blowdown Small Sale

The Spruce Hole project area (665 acres) falls within the Rito-Archuleta LAU (87,002 acres) and the Victoria-Chama LAU (70,978 acres). Four hundred ninety-nine acres of the project are located in the Rito-Archuleta LAU and 166 acres fall in the Victoria-Chama LAU. The project area is not located in or near any key linkage areas. The area is composed of Engelmann spruce and subalpine fir.

No species-specific surveys were conducted for this project. However, if lynx habitat is present, occupancy is assumed. In addition to the Federal lands located in the project area, there are 830

acres of non-federal land in the Victoria-Chama LAU and 7,042 acres of non-federal land in the Rito-Archuleta LAU.

There is one ongoing vegetation management project, Grouse Timber Sale, in the Rito-Archuleta LAU. This project is potentially treating up to 670 acres of lynx habitat (650 acres of denning and 20 acres of other habitat).

In the Rito-Archuleta LAU, the Spruce Hole project has the potential to affect up to about 374 acres of lynx habitat. Currently about 295 of these acres are modeled as denning habitat, 39 acres winter habitat, 37 unsuitable, and 2 "other". In the Victoria-Chama LAU, the Spruce Hole project has the potential to affect up to about 166 acres of lynx habitat. Currently about 118 of these acres are modeled as denning habitat, 27 unsuitable, and 1 "other". No winter habitat within the Victoria-Chama LAU will be affected by this action. In both LAUs, canopy closure within the project area is opening as a result of beetles killing trees, but would be substantially more open as more trees are removed from the site.

Spruce Hole

Rito-Archleta LAU	Baseline before Action (acres)	Number of acres Affected	Net change (acres)	Percent of Habitat change
Denning Habitat (acres)	14,019	295	-295	2.10%
Winter forage (acres)	5,583	39	+295	+5.28%
Other lynx Habitat (acres)	16,556	2	0	0.00%
Total LAU (acres) including non-habitat	87,002	499	499	0.57%

Victoria-Chama LAU	Baseline before Action (acres)	Number of acres Affected	Net change (acres)	Percent of Habitat change
Denning habitat (acres)	15,087	118	-118	-0.78%
Winter forage (acres)	9,895	0	+118	+1.19%
Other lynx habitat (acres)	15,272	1	0	0.00%
Total LAU (acres) including non-habitat	70,978	166	166	0.23%

Outfitter and Guide Special Use Permit Renewal

The existing and potential Outfitter and Guide Special Use Permits being evaluated potentially affect 18 LAUs over 1,814,471 acres across the Rio Grande National Forest. The Rio Grande National Forest LAUs are landscapes and ecosystems typical of central Colorado including non-forested alpine; and subalpine and montane conifer forests with inclusions of deciduous forest, sagebrush, riparian, wetlands, water bodies, grass meadows and shrublands. The LAU mapping is derived from Forest Plan Revision – Common Vegetation Unit mapping efforts and Regional data assumptions.

Existing modeled lynx habitat figures are contained within the Lynx Habitat Analysis for the Rio Grande National Forest (January, 2002). Thirty-nine percent to 69 percent of each LAU (with an average of 54 percent) within the Rio Grande National Forest are modeled as suitable lynx habitat with 61 percent to 31 percent of each LAU modeled as non-suitable. Potential suitable denning habitat is modeled between 31 percent and 54 percent of each LAU of the modeled suitable habitat, thus all LAUs are well beyond the LCAS goals (maintaining 10 percent) for denning habitat. Potential year-round (winter) foraging habitats are modeled between 12 percent and 40 percent of each LAU of modeled suitable habitat. Overall, 7.5 percent of all LAUs model as 'currently unsuitable lynx habitat', ranging from less than one percent to 17.8 percent of any one LAU, thus, consistent with LCAS goals of maintaining 'currently unsuitable lynx habitat' at less than 30 percent. Denning and year-round habitats overlap and together, in light of the relative small degree of 'currently unsuitable habitat' and natural patchiness, reflect potentially suitable habitats being relatively high quality, persisting (low fire interval) conifer (spruce-fir) habitats.

The Rio Grande National Forest LAUs are areas located east of the Continental Divide or west of the Sangre de Cristo Divide, thus, all LAUs are connected to respective adjacent National Forests. The Rio Grande National Forest LAUs are somewhat segregated by the San Luis Valley, but are relatively connected near the Poncha Pass vicinity. The upper elevation borders of the LAUs are the alpine habitats of the Continental or Sangre de Cristo Divides, which do not provide forage or denning habitats for lynx, but they are available for movement should a lynx choose to do so. Similarly, the lower elevation borders of the LAUs are woodland, non-forested or developed areas, which also do not provide forage or denning habitats for lynx, but likely have some cover for movement should a lynx choose to do so.

Forested habitat connectivity between all LAUs appears to exist, in that, vegetation mapping has considered past forest treatments and non-lynx habitats. There are no major interstate highways or extensive human developments bisecting any one LAU once one leaves the San Luis, South Fork Rio Grande or Saguache Creek valley floors. State Highways 17, 114, 149 and 160 bisect their respective LAUs. All the roads are judged to be negotiable by lynx to cross, especially once traffic reduces at night, even though re-introduced lynx have been killed by vehicle collisions (Shenk 2001). Forest connectivity is subject to natural patterns of various forest types and conditions with varying degrees of habitat gap, which lynx regionally and elsewhere have been able to negotiate.

Summer and fall recreation (commercial) special uses have been recently assessed for the Rio Grande National Forest and do not include public dispersed recreation. All uses involve primary access through existing road and trail infrastructure.

Similarly, existing winter recreation uses (public and permitted commercial) occur across the Rio Grande National Forest in the form of dispersed recreation, groomed trails (existing roads and trails) or those existing roads or trails that are authorized for winter use by snowmobilers and cross-country skiers, snowcat trips, mountain lion hunts and hut systems. All LAUs, except two, have varying magnitudes of commercial use. The two LAUs that have no allocated or existing winter special use activities include the Sangre de Cristo-North and South units.

Many of the concentrated winter use areas occur in non-lynx habitat sites. However, they are within overall potential suitable lynx habitat and LAUs. Winter uses have been mapped, forest-wide, as part of this assessment and as a part of the Regional process to develop lynx amendments for all Forest Plans. As described above, dispersed winter uses and groomed uses occur on existing roads and trails, which may or may not intersect with suitable lynx habitat dependent upon the travel feature's linear pattern as it intersects suitable lynx habitat's natural patchy mosaic pattern.

Aspen Ridge Road Easement and Plowing Authorization

The proposed Aspen Ridge Road Easement occurs within the Gore LAU. The 82,798-acre LAU is located in the south-central portion of the Routt National Forest. The table below displays habitat status within the Gore LAU.

Lynx Habitat, by acreage, in the Gore LAU.

	National Forest	Private in NF	BLM, State & Private	
	NF Portion of LAU	W/in NF Portion of LAU	BLM Portion of LAU	Total LAU ***
Winter Foraging Habitat	9105	NA	NA	5718
Denning Habitat	8507	NA	NA	5120
Other Lynx habitat	48794	3951	NA	52745
Non-lynx Habitat	7322	1729	NA	9051
Unsuitable Lynx Habitat	6777	**	**	6777
WinDen*	3387	0	NA	3387
% Currently Unsuitable	9.71%	NA	NA	NA

*WinDen is the total acres that winter forage and denning habitat overlap. **Represents gaps in information not yet acquired from these sources. ***Winter forage and denning habitat in this column are figured by subtracting "WinDen" component

The acreages summarized pertain to Forest Service lands within the LAU only, and do not include private, State, or Bureau of Land Management (BLM) lands inside LAU. Current lynx habitat mapping data calculates the LAU to contain 7,322 (9.5 percent) acres of non-habitat; 6,777 (8.8 percent) acres of unsuitable; 5,718 (7.4 percent) acres of winter forage; 5,120 (6.6 percent) acres of denning. Overlapping winter forage and denning habitat (WinDen) is 3,387 (4.4 percent) acres. Other Lynx habitat is 48,794 (63.3 percent) acres. It should be pointed out here that total denning habitat constitutes 11 percent of the LAU overall habitat.

Factors Affecting Lynx: The road easement passes through approximately three miles of other lynx habitat consisting mostly of shrub type vegetation. Small patches of low quality lodgepole pine denning and winter foraging habitats are adjacent to the easement. The road is coded in the "Snow Compaction Baseline" as a designated winter and motorized route with no grooming (DMX).

> The Gore LAU has been logged multiple times in the past. Recent logging includes the 1996 Red Dirt and 2001 Vista Timber Sales. Previous consulted proposed projects include the East Gore Timber Sale and the 265-acre Red Dirt Fuels Reduction project.
>
> The area has been grazed consistently for the past 100 years and presently the LAU contains both cattle and sheep grazing allotments. Currently the Red Dirt Range Analysis allotment is under review.
>
> The area receives high use by the general public for outdoor recreation activities such as driving, biking, horseback riding, hunting, snowmobiling and gathering of firewood. Grooming of designated snowmobile routes, guided snowmobile and backcountry ski tours occur in permitted locations. Moderate to high intensities of winter use occurs along groomed snowmobile routes and throughout open parks and corridors.

<u>Box Creek Watershed Restoration Project</u>

Status of Lynx/LAU-Montane Zone: Historically, the montane zone consisted of large mixed conifers stands with aspen patches ranging in size from one to more than 100 acres. Stand composition and structure were maintained by low intensity, frequent (30 to 50 year) fire intervals maintaining relatively open stands of mature trees with clumps of dense regeneration and herbaceous understory. Past mining activities of the 1800s harvested conifers for timber, fuel-wood, and charcoal. Snags and CWD, important components of lynx denning habitat, were harvested for fuel. Lodgepole and aspen stands regenerated successfully but reduced species diversity. The lack of fire over the past 100 years prevented natural thinning of the predominately lodgepole stands and limited tree growth creating small, dense and homogenous forests susceptible to abnormal levels of insect and disease populations and tree mortality. Combining severe past harvest activities and fire suppression has resulted in extensive acreages of closed canopy, mature lodgepole pine dominated communities with depauperate understory

and poor crown form (few lower branches). Current snowshoe hare habitat is small in comparison to historically more open stands with herbaceous understory.

Subalpine/Spruce-Fir Zone: Patterns in the spruce-fir community are maintained by stand replacement fire with intervals between 150 to 300 years creating large patches of aspen and spruce-fir/lodgepole regeneration greater than 100 acres across the landscape. Low intensity fires create small patches of early seral stand structure. The subalpine zone in the LAU is similar to the historic composition and structure but patch diversity is lacking across the landscape. Timber harvest in the area's spruce-fir also occurred but may have had less of an impact on subalpine community compared to the lower elevation mixed conifer due to site potential (ability to support vegetation) [is greater in the subalpine zone (moister), and the steep slope in the upper elevations may have contributed to less desirable conditions for harvesting and charcoal production]. The following table depicts the current vegetation landscape and structural stages from thematic LANDSAT mapping data.

Vegetation type and structural stage in the Box Creek Watershed.

VEGETATION	STRUCTURAL STAGE (ACRES)									
TYPE	1	2	3A	3B	3C	4A	4B	4C	5	Subtotal
Alpine meadow	28	0	0	0	0	0	0	0	0	28
Alpine shrub	534	0	0	0	0	0	0	0	0	534
Aspen/conifer	0	0	322	137	781	0	0	0	0	1,240
Barren	433	0	0	0	0	0	0	0	0	433
Lodgepole pine	0	376	1,984	2,160	556	102	12	41	0	5,231
Ponderosa pine	0	0	1	69	0	411	579	0	0	1,060
Spruce/fir	0	0	0	0	814	0	0	221	404	1,439
Riparian	0	2,412	0	0	0	0	0	0	0	2,412
Sagebrush/grassland	5,914	0	0	0	0	0	0	0	0	5,914
Water	353	0	0	0	0	0	0	0	0	353
Subtotal	7,078	2,789	2,308	2,367	2,155	504	591	262	404	18,644

Habitat structural stage and canopy closure (below). Stages are expressed as a two-digit code to indicate the general stem size and stem canopy closure within a geographic area. For example, a 4C stand would largely be comprised of trees 9.0 to 20.9 inches in diameter and have a canopy closure of 70 to 100 percent.

SIZE STRUCTURE	SIZE CLASS (Inches)
Grass-forb-shrub (1)	0.9 or less
Shrub-tree-seedling (2)	1.0-4.9
Pole-sapling (3)	5.0-8.9
Mature (4)	9.0-20.9
Old tree (5)	21.0 or greater"

CANOPY STRUCTURE	CANOPY CLASS (Percent)
Open (A)	0-29
Moderate(B (B)(B)	30-69
Closed (C)	70-100

Tennessee Pass LAU is composed of 260,687 acres total. Table A3 lists lynx habitat acreages based on the Pike San Isabel National Forest revised Lynx Habitat map (USFS 2001) and the following established lynx habitat categories (Grode, 2003):

Non-lynx Habitat: Areas that do not support snowshoe hare populations and are not considered to be capable of providing lynx habitat.

Lynx Habitat: Lynx habitat is all habitat that can potentially be used by a lynx to meet its year-round requirements.

Suitable Lynx Habitat: Lynx habitat that provides foraging or denning components.
Winter Foraging: Snowshoe hare habitat.
Denning Habitat: Used during parturition and rearing of young. The common component is large woody debris that can provide escape and thermal cover for kittens.
Other Habitat: Alternate prey foraging (red squirrel, grouse, etc.).
Currently Unsuitable: Early successional stages of lynx habitat but does not presently provide any necessary life requirement components.

Table A3. Lynx habitat and proposed treatment acreage in the Tennessee Pass LAU.

	Tennessee Pass LAU		Proposed Treated	
Habitat Characteristics	Acres	%	Acres	%
Lynx Habitat	134,633	52	5743	4.3
Non-Lynx Habitat	126,054	48	1245	<1
Currently Unsuitable	1,755	<1	601	<1
Winter Foraging Habitat	46,691	18	444	<1
Other Habitat	43,583	17	0	0
Lynx Denning Habitat	58,486	22	419	<1
Total Size	260,687	100	6987	

*Note: Subcategories of lynx habitat do not calculate to total of 134,633-acres, as the overlap of denning and winter foraging are double counted by 15,882 acres. This does not change adherence to LCAS standard and guidelines.

More than half of the LAU acreage is composed of lynx habitat (134,633 acres) while the remaining half consists of non-lynx habitat. Less than one percent (1,755 acres) of the lynx habitat is currently unsuitable. The Tennessee LAU is consistent with LCAS standards and guidelines in habitat percentages and distributions.

Lynx denning and foraging habitat in the project area consists mostly of mature lodgepole lacking understory down woody material (BA Figures 2 and 3). Lynx winter foraging habitat is characterized by individual or small patch regeneration in the understory of mature spruce and subalpine fir. Available forage is limited for snowshoe hare in many of the proposed treatment areas because of generally high stem densities, and high canopy closure (greater than 90 percent).

Roads: Federal policy limits motorized travel to designated "system" roads. However, compliance with laws regarding use of legal routes in the project area has been low and confounded by the presence of unmarked existing roads or "user-created"(i.e. non-system) routes. This has resulted in more miles of "non-system" roads than system roads (Table below). Approximately 2.2 miles of open motorized routes on Federal lands per square mile of lynx habitat are within the Box Creek Watershed. Approximately 12 miles of non-motorized designated over-the-snow routes occur within the project area to access Mount Elbert.

Existing miles of motorized travel routes on Federal lands in Box Creek Watershed.

Route Status		
Route Status	System	Non-system
Gated all year	7.04	0.29
Open all year	19.19	29.04
Total	26.23	29.33

Recreation: Three non-motorized trails are in the project area: 1) Colorado Trail/Continental Divide National Scenic Trail (5 miles), 2) North Elbert Trail (2-3 miles), and 3) South Elbert Trail (2-3 miles). There are 17 permitted outfitter and guide operations providing 1,336 public service/user days with activities including hiking, backpacking, skiing, mountaineering, and horseback riding. Three separate recreational events occur under one special use permit within the project area. The Leadville trail races include a 100-mile mountain bike, a 100-mile trail run, and a 100-mile training run.

The project area has no developed recreation sites. Dispersed recreation occurs within the Lodgepole Flats and Mount Elbert Forebay area. Within the project area, people utilize the road network (both system and non-system) to walk dogs, run, bike, hunt, target shoot, drive 4-wheel vehicles, cross-country ski, and snowmobile. Approximately 20 dispersed campsites in the Lodgepole Flats area is used primarily by hunters in the fall season. Mount Elbert Forebay is popular for dispersed camping with about 70 fire rings and associated dispersed camping sites in the area.

Based on trailhead register data for 2001, there were approximately 2,030 people who hiked on the Colorado Trail starting at the North Elbert Trailhead in the Halfmoon Creek drainage. From the South Elbert Trailhead in 2001, there were approximately 4,000 people registered for activities such as hiking, backpacking, skiing, mountaineering and snowshoeing. Since many people choose not to register at Forest Service trailheads, it is assumed that true user numbers are probably twice the recorded number.

Other recreational activities within the project area include big game hunting and mountain peak climbing. The project area is entirely within Game Management Unit (GMU) 48. In 2001, there were approximately 900 hunters with deer and elk tags in GMU 48 that contributed to over 4,000 total recreation days as reported by the CDOW. Good road access and dispersed camping opportunities bring hunters to the project area.

Snow compacting activities that are under special use permit as well as established public use areas have been mapped as part of the baseline and are not known to compromise lynx habitat. There are currently no designated over-the-snow routes or snowmobile play areas within the Box Creek watershed. Large interconnected blocks of foraging habitat are primarily located in the subalpine zone within the Box Creek watershed where baseline snow compacting activities are minimized. Winter dispersed use is concentrated in the northern portion of the LAU near Tennessee and Fremont Pass (i.e., Ski Cooper, Piney Creek Nordic Center, 10th Mountain Huts). Dispersed baseline activities include permitted winter outfitter and guide (i.e., backcountry snow-shoeing, winter camping, cross country skiing).

Fire: Since 1955, there have been more than 15 fire starts in the project area. Little acreage has burned to date but current fuel loading presents opportunity for that pattern to change. Planned burning projects within the project area include slash and pile burning within designated public fuel-wood areas.

Land: Most legal land claims found within the project area were established for right-of-way access needs. The Bureau of Reclamation is the holder of the permits and easements. The Box Creek project area is also transected by the Homestake water transmission pipeline, owned and operated by the cities of Colorado Springs and Aurora. The uses are long-term and are likely in perpetuity.

The BLM is currently in the process of obtaining 160 acres of the Hallenbeck Ranch and 1,410 acres of the Hayden Ranch through a land acquisition that would move these lands into Federal ownership and managed by the BLM. Although the acquisition is not part of this decision, the roads on these properties have been identified, and should the acquisition be completed, all roads are being analyzed in this document for closure. There are no known land transactions outside of the Hollenback/Herrington land exchange. A significant amount of land was acquired by the Bureau of Reclamation in the 1960s and was transferred to the NFS under the Frying Pan-Arkansas Project Act of August 16, 1962.

Mining: The latest BLM records (November 6, 2002) show 13 active mining claims in the Box Creek project area. The same claimant, Corske LLC, owns all the active mining claims but does not have a Plan of Operations or Notice of Intent filed with the Leadville Ranger District. Field visits indicate no significant surface disturbing activity is taking place. Due to location of claims and the nature of mineral extraction, it is unlikely that heavy equipment will be used in the future. Hand tools, sluice box, and small suction dredging operations are applicable activities for the extraction of free flowing gold mineral in a placer operation. Due to the lack of mineral concentration and poor economic feasibility, it is unlikely mineral activity will increase. BLM records show an approximate total of 1,025 closed mining claims within the project area. Approximately 3,781 acres are withdrawn (closed to mineral entry under certain acts, regulations, or public land orders) within the Box Creek project area

Green Ridge Mountain Pine Beetle Treatment

Currently, there is little evidence that lynx inhabit the Routt National Forest, particularly in habitats located in the Rabbit Ears Range. However, one released lynx (1999), a radio-collared female, took up residency on the Forest for at least 2 weeks in June 2001 on the Yampa Ranger District (Broderdorp, USFWS, pers, comm. 2002). Lynx have been detected north of the I-70 corridor within the past 4 years, although most have returned to habitats south of I-70.

Status of Species

Measurement of Habitat Change: Two LAUs partially over lap with the Green Ridge Analysis Area; Sheep Mountain and Owl Mountain LAU.

Sheep Mountain LAU: The Sheep Mountain LAU is coincident with the majority of activity areas and is located on the north side of the Rabbit Ears Range and mostly west of Willow Creek Pass. Sheep Mountain LAU contains a total of 106,652 acres.

Owl Mountain LAU: The Owl Mountain is located east of Willow Creek Pass, on the east side of the Green Ridge Analysis Area, and is adjacent to Rocky Mountain National Park. Owl Mountain LAU contains a total of 58,081 acres.

The Sheep Mountain LAU unsuitable habitat to total suitable habitat ratio is 7 percent (5,568 of 85,498 acres) and the unsuitable habitat to total suitable habitat ratio in the Owl Mountain LAU is 8 percent (3,498 of 44,810 acres). These percentages (and acres) are calculated using only the national forest portions of the LAU's. The following table shows the total acres of each habitat type (and non-habitat) found within the boundaries of the 2 LAU's.

Total acres of existing lynx habitat within the combined areas of the Sheep Mountain and Owl Mountain LAUs.

Acres of Lynx Habitat (by Type) and Non-habitat within the Sheep Mountain and Owl Mountain LAU's	National Forest Portion of the LAU's		Private Portion of the LAU's		Total Acres in both LAU's (Sheep + Owl)
	Sheep Mtn.	Owl Mtn.	Sheep Mtn.	Owl Mtn.	
Winter Foraging Habitat	7336	6887	NA	NA	14223
Denning Habitat	20158	7926	NA	NA	28084
Other Lynx habitat	58004	29997	487	233	88721
Non-habitat for Lynx	12536	7960	117	443	21056
Habitat Currently in Unsuitable Condition	5568	3498	Unknown	Unknown	9066
Acres w/o sufficient data to classify habitat	2446	1137	--	--	3583
TOTALS	106,048	57,405	604	676	164,733

A field reconnaissance in 2002 by Forest Service wildlife biologist, John Wells along with aerial photograph interpretations and consultation with the Forest's resource specialist revealed that 2000 acres of denning habitat in proposed treatments identified by the current lynx habitat

model, was incorrect. Specifically, lodgepole pine stands proposed for MPB treatment are largely single-storied and lack any significant accumulation of coarse woody debris. The size, quantity and arrangement of coarse woody debris found in existing stands is much below what is essential to provide dens and protection for lynx kittens. The 2,000 acres of "denning" habitat, was reclassified as other habitat in the analysis area (In this case, it was noted as mature lodgepole pine). Consequently, the table indicates slightly more than 2,000 acres of other habitat and 2,000 acres less denning habitat. With this change to the habitat classification, no proposed treatments would occur within denning habitat.

Approximately 500 acres of private, State and BLM administered lands in the action area vicinity have been clearcut; converting suitable lynx habitat to unsuitable. The private, State and BLM administered lands are at lower elevation than most of the national forest, making them less suitable for lynx habitation than National Forest Lands.

The Gould Fuel Reduction Project is the only timber cutting within the Sheep Mountain and Owl Mountain LAUs that is planned on the national forest. The Gould project is scheduled to treat 168 acres of other habitat. Specifically, 142 acres of mature lodgepole pine and 26 acres of aspen-dominated stands will be treated. All acres treated in the Gould project would degrade but not remove the 168 acres from the other lynx habitat category.

Lost Park Grazing Allotment

Status of Lynx/LAU: The Bears Ears LAU is 102,387 acres located in the Northwest portion of the Routt National Forest with associated lynx habitat as described in the table below. The LAU contains 50,091 acres (51.2 percent) of the NFS land in timber emphasis management areas and 35,232 acres (36 percent) of the NFS land in wilderness or backcountry (restrictive) management areas.

Lynx Habitat in the Bears Ears LAU

	National Forest	Private in NF	BLM, State & Private	
	NF Portion of LAU	W/in NF Portion of LAU	BLM Portion of LAU	Total LAU
Winter Foraging Habitat	28521	NA	NA	4981
Denning Habitat	23580	NA	NA	40
Other Lynx habitat	53711	856	3884	58451
Non-lynx Habitat	10589	545	0	11134
Unsuitable Lynx Habitat	2504	**	**	**
WinDen^	23540	109	748	24397
% Currently Unsuitable	2.95%	@	@	@

^-WinDen represents both denning and winter foraging habitats). On private, State or BLM lands, winter foraging and denning habitats were not defined independently and thus WinDen identifies the total estimated acres in winter foraging and denning habitat on those lands.
**-Currently unable to calculate based on available information.
@-Unable to properly calculate without the unsuitable data (**).

The 12,368-acre Lost Park Grazing Allotment area is composed of Engelmann spruce/sub-alpine fir (55.3 percent), aspen (29.5 percent), lodgepole pine (4.3 percent), grass (6.2 percent), forb (0.02 percent), and mountain shrub (4.5 percent). The analysis area receives large amounts of snow during the winter and generally is not snow free until June.

During the 1999, 2000 and 2001 field seasons, the allotment was evaluated for range quality, riparian and aquatic condition, and invasion of noxious weeds. The assessment demonstrated the forage quality was healthy and considered to be stable. Data collection during the 2000 field season suggests that the forage condition of the allotment is exhibiting good vigor, productivity, and a variety of age classes (Voorhis, 2001. pers. comm.). Shrub cover types generally occur in adequate ecological conditions with stable or improving trends. The aspen cover types are in fair condition but on the decline. Conifer encroachment is occurring within the analysis area and decreasing the quantity and quality of grasses, forbs, and shrubs within the aspen cover type. The encroachment is limiting the range quality and will eventually eliminate the aspen component.

Factors Affecting Lynx: Historically, the area was divided into two separate grazing allotments, each of which was grazed by one band (1,000-1,500 ewes with lambs) of sheep. These combined allotments were known as the Lost Park S and G and the Sawtooth S and G. These two allotments were administratively combined into one grazing allotment known as the Lost Park Grazing Allotment to facilitate management due to the fact that the permittee controls both permits.

There are several grazing allotments within the LAU for both cattle and sheep. This area has been grazed consistently by domestic ungulates for over 100 years. Currently, there are several range allotment EAs being prepared for this LAU. These include: Johnson-Oliver, Slater, Lost Park and Stewardship range allotments. The California Park grazing allotment RAMP is currently being developed.

Approximately 40 years ago the Bears Ears LAU was logged. The past logging occurred in '1st' growth timber stands. Within the past 10 years approximately 5 percent (4,169 acres) of lynx habitat including spruce-fir, lodgepole pine and aspen cover types have been harvested. All timber sales have since been closed and currently no logging occurs within the LAU.

The general public uses the area for outdoor recreation. There are many miles of roads, motorized and non-motorized trails. Recreational uses include: driving, hiking, biking, horseback riding, hunting, snowmobiling and gathering firewood. Fall hunting activity is considered high in this area. Similarly winter snowmobile activity is considered moderate.

Currently the Forest Service permits several recreational outfitters including hunting and snowmobiling outfitters.

Logging has occurred on the BLM portion of the Bears Ears LAU on private land of a wilderness ranch adjacent to the National Forest. This area of the LAU also contains extensive summer home development. Activities associated with the Bark Beetle EIS are currently the only significant actions being planned through the NEPA process, besides the ongoing range allotment analysis.

The Lost Park Grazing Allotment has been allocated 1.32 (Backcountry Recreation – Nonmotorized with Winter Limited Motorized), 2.1 (Special Interest Areas), 4.2 (Scenery), 4.3 (Dispersed recreation) and 5.11 (General Forest and Rangelands-Forest Vegetation Emphasis) management prescriptions.

Weiham Driveway Construction

The Lower Elk River LAU is comprised of 77,975 acres containing 1,442 acres (1.9 percent) of NFS land in timber emphasis management areas and 49,624 acres (64 percent) in wilderness or backcountry (restrictive) management areas with lynx habitat as described in the table below. Lynx habitat in the project area is categorized as "other" and is not in a landscape linkage zone.

Lynx Habitat in the Lower Elk River LAU

	National Forest	Private in NF	BLM, State & Private	
	NF Portion of LAU	NF Portion of LAU	BLM Portion of LAU	Total LAU
Winter Foraging Habitat	19635	NA	NA	7635
Denning Habitat	16836	NA	NA	4836
Other Lynx habitat	35896	5341	36	41273
Non-lynx Habitat	8460	1879	0	10339
Unsuitable Lynx Habitat	1308	**	**	**
WinDen ^	12000	113	373	12486
% Currently Unsuitable	2.12%	@	@	@

^-WinDen represents double counted acres on Forest Service lands (i.e. lands that are considered both denning and winter foraging habitats). On private, State or BLM lands, winter foraging and denning habitats were not defined independently and thus WinDen identifies the total estimated acres in winter foraging and denning habitat on those lands.
**-Currently unable to calculate based on available information. Data is outside the scope or responsibility of the Forest Service.
@-Unable to properly calculate without the unsuitable data (**).

Factors Affecting Lynx: Logging activity in the LAU has been minimal with only five acres of timber harvested in the past 10 years. No timber sales are currently planned or being implemented in the LAU. The area has been grazed consistently by domestic ungulates for over 100 years and the LAU presently contains grazing allotments.

Moderate use of outdoor recreation by the general public includes: hiking, biking, horseback riding and hunting. Winter snowmobile activity is essentially non-existent due to restrictions implemented on big game winter range. Currently, the Forest Service permits several recreational outfitters. The area is not heavily roaded but contains many miles of non-motorized trails.

The Bark Beetle Project impact was included in the lynx environmental baseline.

Bear River/Dunckley Pass/Lower Trout Creek Prescribed Burns

The proposed permitted activities occur within the Dunckley LAU. The LAU is comprised of approximately 87,302 acres and contains lynx habitat as outlined in the following table.

Lynx Habitat, by acreage, in the Dunckley LAU.

	National Forest	Private in NF	BLM, State & Private	
	NF Portion of LAU	W/in NF Portion of LAU	BLM Portion of LAU	Total LAU
Winter Foraging Habitat	17,742	NA	NA	34,023
Denning Habitat	545	NA	NA	16,826
Other Lynx habitat	26,459	4936	NA	31,395
Non-lynx Habitat	17,427	418	NA	17,845
Unsuitable Lynx Habitat	3,332	**	NA	3,332
WinDen *	16,281	162	NA	16,443
% Currently Unsuitable	5.18%	**	NA	NA

*WinDen is the total acres that winter forage and denning habitat overlap.
** Represents gaps in information not yet acquired from these sources.

The acreages summarized below pertain to NF lands within the LAU only, and do not include private, State, or BLM lands included in the Dunckley LAU. Mapping indicates there is an estimated 17,427 acres of non-lynx habitat in the LAU. Current unsuitable habitat for lynx comprises 3,332 acres. The winter forage habitat includes 34,023 (38.9 percent) acres including WinDen. Denning habitat is 16,826 (19.3 percent) acres including WinDen. Overlapping winter forage and denning habitat (WinDen) is 16,281 (20 percent) acres. Other lynx habitat is 26,459 (32.4 percent) acres. The non-lynx habitat consists of 21 percent of the total area. The unsuitable habitat represents 4.1 percent of the total area.

Factors Affecting Lynx: There are several grazing allotments within the Dunckley LAU for both cattle and sheep. This area has been consistently grazed by domestic ungulates for over 100 years and receives high use by the general public for outdoor recreation. Recreational uses include: driving, biking, horseback riding, hunting, and snowmobiling. Currently the Forest Service permits several recreational outfitters including hunting and snowmobiling. There are developed campgrounds, several trailheads, many miles of roads, and other motorized trails.

Current conditions within the analysis area are being managed appropriately according to standards and guidelines outlined in the RNF and RMP (1997 Revision). Historical management actions have not changed more than 5.18 percent of lynx habitat within the LAU to an unsuitable condition within a 10-year period. Denning habitat will be maintained in patches larger than 5 acres, in accordance to project planning standards in the LCAS, comprising at least 10 percent of lynx habitat and the baseline conditions are less than 30 percent unsuitable in the LAU. Implementation of the proposed actions will be compliant in accordance with the objectives and standards listed in the LCAS (Ruediger et al., 2000).

Webster Pass Mining Exploration 2003

The Kenosha Pass LAU is composed of 221,067 acres. Nearly half of the LAU acreage is composed of non-lynx habitat while the remaining half consists of various lynx habitat types (Table below). Presently, 0.6 percent (674 acres) of the LAU's lynx habitat is currently unsuitable. The other 99.4 percent of available lynx habitat is suitable for various life requirements. The LCAS requires maintaining greater than 30 percent of the LAU in suitable condition and that at least 10 percent remains as denning habitat. The table provides a summary of this information. Kenosha Pass LAU is consistent with LCAS standards and guidelines in suitable condition habitat percentages and distributions. Reintroduced lynx are known to have passed through the LAU.

Kenosha Pass LAU-Lynx Habitat Acreages (including private lands)

Gross LAU Acres	221,067
Non-Lynx Habitat	110,500
Total lynx Habitat	110,567
Denning Habitat Only	8,769
Foraging Habitat Only	5,146
Denning and Foraging Habitat	34,365
"Other" Lynx Habitat	60,939
Currently Unsuitable	674
Percent of LAU Unsuitable	0.6%

The area surrounding the drill sites is defined as a 1,200 acre sub watershed on the south side of Webster Pass at an elevation of 10,600 to 12,800 feet in a wide glacial valley surrounded by tall alpine peaks. Loose rock with little vegetation occurs on the upper slopes of the peaks. This gradually changes to alpine meadows then krummholz (subalpine-fir and Engelmann spruce) on lower slopes. Spruce-fir forest is also located on the valley floor. The headwaters of Handcart Gulch flow through the project area.

Factors Affecting Lynx: The action area is located within Colorado Mineral Belt, an area historically mined since the 1860s. Recent mineral exploration in 2001 and 2002 affected approximately ½ acre of the LAU, principally outside of lynx habitat. In 2001, the project proponent began exploration with one drill site at Webster Pass. Operations have been conducted since 2001 in the area, with site-specific drill locations changing each year. In 2002, three sites were drilled and approximately 1,400 feet of roads were constructed, affecting approximately ½ acre. A dismantled ski area, Geneva Ski Basin is located near Guanella Pass.

The project area contains several conspicuous 4-wheel drive roads and receives a high level of recreational traffic and ATV use in the summer and snowmobile activity in the winter.

Ongoing activities within the LAU include, the Guanella Pass road improvement project (FHWA 2002), the Jefferson prescribed burn (3,000 acres), and baseline recreation special use permits and snow compaction activities. The Forest Service expects additional future drilling proposals. An EA is presently being completed for the 2003 Plan of Operation.

Mount Massive Route Stabilization Project

Montane Zone: Historically, the watershed's montane zone consisted of large mixed conifers stands with aspen patches ranging in size from one to more than 100 acres. Stand composition and structure were maintained by low intensity, frequent (30 to 50 year) fire intervals maintaining relatively open stands of mature trees with clumps of dense regeneration and herbaceous understory. Past mining activities of the 1800s harvested conifers for timber, fuel-wood, and charcoal. Snags and course woody debris, important components of lynx denning habitat, were harvested for fuel. Lodgepole and aspen stands regenerated successfully but reduced species diversity. The lack of fire over the past 100 years prevented natural thinning of the predominately lodgepole stands and limited tree growth creating small, dense and homogenous forests susceptible to abnormal levels of insect and disease populations and tree mortality. Severe past harvest activities and fire suppression has resulted in extensive acreages of closed canopy, mature lodgepole pine dominated communities with depauperate understory and poor crown form (few lower branches). Current snowshoe hare habitat is small in comparison to historically more open stands with herbaceous understory.

Subalpine/Spruce-Fir Zone: Patterns in the spruce-fir community are maintained by stand replacement fire with intervals between 150 to 300 years creating large patches of aspen and spruce-fir/lodgepole regeneration greater than 100 acres across the landscape. Low intensity fires create small patches of early seral stand structure. The subalpine zone in the LAU is similar to the historic composition and structure but patch diversity is lacking across the landscape.

Timber harvest, within in the area's spruce-fir component, also occurred, but may have had less of an impact on subalpine community compared to the lower elevation mixed conifer, due to site potential (ability to support vegetation) is greater in the subalpine zone (moister), and the steep slope in the upper elevations may have contributed to less desirable conditions for harvesting and charcoal production.

Tennessee Pass LAU is composed of 260,687 acres total. The table below lists lynx habitat acreages based on the Pike San Isabel National Forest revised Lynx Habitat map (USFS 2001) and the following established lynx habitat categories (Grode, 2003):

Non-lynx Habitat: Areas that do not support snowshoe hare populations and not considered to be capable of providing lynx habitat.

Canada lynx habitat within the Tennessee Pass LAU.

Tennessee Pass LAU		
Habitat Characteristics	Acres	%
Lynx Habitat	134,633	52
Non-Lynx Habitat	126,054	48
Currently Unsuitable Lynx Habitat	1,755	<1
Lynx Winter Forage Habitat	46,691	18
Lynx Other Forage Habitat	43,583	17
Lynx Denning Habitat	58,486	22
Total Size	260,687	100

Note: Subcategories of lynx habitat do not calculate to total of 134,633 acres as the overlap of denning and winter foraging are double counted by 15,882 acres. This does not change adherence to LCAS standard and guidelines.

Lynx habitat surrounding the project site includes mature stands of lodgepole lacking understory foraging and denning features such as down woody material. High quality lynx habitat in the area is associated with spruce-fir and conifer mixed with aspen. Currently unsuitable habitat is not present within the project area.

The Resource Inventory Systems (RIS) data in following table shows the area surrounding the proposed trails travel through a variety of vegetation types. The trails themselves are predominantly within spruce-fir forest, shrubland, and grasslands.

Estimated current acres of vegetation types in the Mount Massive Project Area.

VEGETATION TYPE	ACRES	PERCENT
Aspen	459	2.3
Barren/Rock	5,251	26.7
Bristle cone pine	55	< 1.0
Grassland	3,585	18.2
Lodgepole pine	3,594	18.2
Shrubland	1,682	8.5
Spruce-fir	5,029	25.5
Private lands	48	< 1.0
Subtotal	19,703	

Recreation: There are 12 permitted outfitter and guide operations providing 2,634 public service/user days with activities including hiking, backpacking, skiing, mountaineering, snowshoeing, and hunting. There are no recreational events or developed sites that occur within the project area. Most dispersed recreation in the project area is associated with the trail system. There are approximately 16 dispersed campsites associated with the existing North Halfmoon route and 27 sites associated with the Main Massive Route.

Existing snow compacting activities (i.e. snowmobiling, snowshoeing, cross-country skiing, dog sledding, etc.) under special use permit and established public use areas have been mapped as part of the baseline and are monitored for intensity of snow compacting activities. These activities are not known to compromise lynx habitat. Dispersed use is ephemeral and not concentrated or repetitious in nature and/or location.

Currently the project area does not have non-motorized designated over-the-snow routes and there will be no net increase in groomed or designated over-the-snow routes or snowmobile play areas in dispersed recreation areas within the LAU.

Large interconnected blocks of foraging habitat are primarily located in the subalpine zone adjacent to the Project Area and there are no baseline snow compacting activities. Winter dispersed use is concentrated in the northern portion of the LAU near Tennessee and Fremont Pass (i.e., Ski Cooper, Piney Creek Nordic Center, and 10th Mountain Huts). Dispersed baseline activities include permitted winter outfitter & guide (i.e., backcountry snow-shoeing, winter camping, cross country skiing).

Dinner Park Timber Sale

Currently, no lynx are believed to permanently inhabit the Routt National Forest. However, one of the released lynx, a radio-collared female, took up residency on the Forest for at least two weeks in June 2001 on the Yampa Ranger District (Broderdorp, USFWS, pers. comm., 2002). Sixty percent of the Forest is mature, over-mature lodgepole pine. The stands lack compositional complexity and coarse woody debris. Little vegetation is growing in the understory. The remaining percentages consist of sagebrush communities, meadows, shrub species, other timber and riparian areas. Past logging has contributed to simplify forest structure.

The project area consists of the typical lodgepole found on the Forest being replaced by spruce/fir. The stands proposed for treatment lack optimum habitat for the full spectrum of lynx life needs. They do not function as reproductive sites as there is little or no structure (hollow down or standing trees) to provide a usable lynx den. However, there is some other foraging opportunity present. The aspen groves offer ancillary foraging for ground-dwelling voles or other rodents attracted to these hardwoods. Most large aspens are currently sound and have few structural defects that could provide cavity habitat.

Primary vegetation for lynx is fragmented along mountain ranges and summits of high broad plateaus. Lynx move from one prime location to another through habitat or linkage zone that typically provides the necessary life requirement components that will sustain a lynx for several weeks during dispersal. The key issue for a linkage corridor is maintaining or increasing the permeability of the area to allow dispersal.

The following tables list past percentages of timber harvest in the Sierra Madre lynx linkage. The tables indicate a total of 9.5 percent of the area has been effected in the last ten years.

Accumulated harvest within the Sierra Madre Lynx Linkage.

Wyoming			Colorado		
Sale	Clearcut Acres (%)*	Partial Cut Acres (%)	Sale	Clearcut Acres (%)	Partial Cut Acres (%)
Wy. RJW-east	178 (0.5)	218 (0.7)	Hog Park	316 (0.9)	602 (1.8)
Wy. RJW-west	140 (0.4)	138 (0.4)			
Wy. Coon Creek	979 (3.0)	X			
Non-federal			Non-federal		
Wy. Private	0	0	0	0	0
Wy. State-existing	210 (0.6)	13 (<0.1)	0	0	0
Wy. State-Dudley Crk	125 (0.4)	13 (<0.1)	0	0	0
Wy. State-Damfino Crk.	165 (0.5)	0	0	0	0

* Percent of the 32,674-acre linkage corridor

Linkage Corridor (of 32,674 acres) Totals.

	Past Harvest Acres	% of Linkage Corridor
Wyoming	2179	6.7 %
Colorado	918	2.8%
Combined states-TOTAL	2270	9.5%

Note: The harvest acres for the Damfino Creek State lands include current and expected harvest acres from an ongoing multi year sale.

EFFECTS OF THE ACTION

Breckenridge Ski Area Improvements

Permanent loss of approximately 0.93 acres of doghair lodgepole pine will result from construction of the Peak 7 Restaurant. This habitat is considered winter foraging habitat as mapped by the White River National Forest. Although the BA states that this area does not currently provide significant habitat value to lynx, it is mapped as having potential future value. All habitat disturbances that will result from this project are within the developed interior of BSA where forested habitats are highly fragmented by ski trails. No other direct effects to lynx habitats are anticipated from the proposed action. 0.06 acres of other lynx habitat will be temporarily impacted from the placement of the infiltration gallery on Sawmill Creek, which will provide water to the Vista Haus and Peak 7 restaurant.

Indirect effects are considered minimal as a result of the proposed action. Loss of habitat that results for the Peak 7 restaurant will preclude any future potential habitat suitability. Daytime activities near the Restaurant may result in the inability of the surrounding forest to be used by lynx for diurnal security. However, this habitat may not have provided diurnal security due to the presence of an existing road near the construction site.

Additional information provided by the Forest Service states that the proposed action met the criteria for the use of the Colorado lynx screen process, clearly signifying the projects insignificant effects to lynx. Impacts to lynx habitat result in an insignificant loss off lynx habitat, leaving the remainder of the LAU capable of supporting lynx. The Ski area still retains habitat features that will provide for lynx movement across its expanse

White River Resort Special Use and Outfitter/Guide Permit Renewal

Direct Effects

Proposed stand density management treatments (thinning) could affect up to about 7 acres of spruce/fir habitat that is currently suitable lynx denning/winter foraging habitat. The interface (areas near structures) treatments would create unsuitable habitat, as it would thin the forest, remove conifer understory, and maintain these treatment conditions through time. This action will increase the amount of unsuitable habitat in the South Fork White River LAU to 0.12 percent. Although the LCAS discourages pre-commercial thinning in stands that provide quality hare habitat, it should be recognized that thinning within 200 feet of structures does not necessarily result in adverse effects to lynx. Habitat in close proximity to structures and human activity may have already lost its functionality as lynx foraging/denning habitat.

Re-issuance of the grazing permit and the guide/outfitter permits associated with operation of the Resort will not result in additional (above baseline) direct impacts to lynx or lynx habitat. The grazing permit renewal would continue the current level of grazing use, which appears to be compliant with forest-wide standards and guidelines.

Indirect Effects

Loss of 7 acres of denning/winter forage habitat will result in a minor reduction in overall habitat availability during winter months. Where surveys have indicated a high number of hares within this habitat, that habitat will become unavailable, and consequently may slightly reduce the carrying capacity of the habitat for hares, which will reduce prey availability for lynx. Summer activities at the resort have likely already resulted in an avoidance response by lynx, however the remaining lynx habitat would still be available during the non-operating season. Although denning habitat exists in close proximity to the resort area, there is little likelihood that a lynx would choose to den near concentrated human activity.

Although some competition may exist between livestock grazing and forage availability for snowshoe hares, Forest Plan standards and guidelines for grazing are consistent with similar standards in the LCAS. The effects of grazing are not anticipated to result in adverse effects to lynx.

The camps would be primarily located in or on the edge of open areas and would not significantly affect potential lynx security areas, or block lynx movements as forest cover exists near the camps that lynx could use to travel through without detection by recreational users. Any individual lynx that encountered activity would likely avoid the area.
This proposed project met the screening criteria, set forth in the lynx decision tree, which programmatically analyzed impacts to lynx, which were found to be clearly insignificant and discountable to lynx.

Allen Creek Project

The proposed action proposes 90 acres of clearcut harvests in mature lodgepole pine, which will render these 90 acres unsuitable lynx habitat. Although these cuts will not provide winter forage for approximately 15 years, in their present conditions these stands are not currently providing winter forage habitat. These treatments will provide a diversity of age classes within the lodgepole cover type. These cuts are adjacent to mature lodgepole pine, mature aspen, and mature spruce-fir mixed stands, which all provide suitable travel habitat and most provide winter forage.

Proposed prescribed burns within mature lodgepole pine stands will result in the conversion of approximately 50-60 percent, or approximately 66 acres, of habitat to an unsuitable condition. It has been estimated by the Forest Service that the unit should regenerate into high quality winter forage habitat for lynx within approximately 20-25 years. Standing snags, and other down material should provide for future denning habitat within the burn area.

Approximately 175 acres of aspen clear-cuts are proposed, half of which are located adjacent to conifer stands. Fifty-six acres of the proposed aspen clear-cuts are outside of lynx habitat. One hundred nineteen acres of aspen will be converted to an unsuitable condition. Snowshoe hare utilize densely regenerating aspen stands in winter when they are in close proximity to occupied conifer habitat. Because aspen regenerates quickly, it is estimated that when it is adjacent to, or intermixed with, winter foraging habitat, it could provide winter forage habitat as soon as 5-10 years. Regenerating aspen stands would provide summer travel habitat within a few years following harvest, and winter travel habitat within 5-10 years.

The proposed action would treat 215 acres of spruce-fir with a sanitation/salvage prescription to suppress bark beetle populations. Insect infested and some of the dead spruce trees would be removed. Salvage actions would not remove any healthy green trees, and should not change the structural stage, or habitat parameters of the stands. Down wood will not be removed, which should provide potential denning sites within the stands. Sanitation/salvage of spruce fir stands will likely result in a reduction in habitat quality until the understory recovers in approximately 20 years.

Approximately 55-65 acres of lodgepole pine thinning is proposed. Approximately 55-65 acres of small diameter lodgepole pine would be thinned to improve the health and vigor of residual trees within selected high-density stands. Individual trees less than 7.0 inches in diameter that have self-pruned at least two feet above the average snow line would be removed as forest products or left on site for nutrient recycling. Approximately 115-140 acres of lodgepole pine would be sanitized to prevent and/or suppress centralized dwarf mistletoe infestations and protect residual lodgepole pine stands in the area. Individual trees with infestations of dwarf mistletoe would be selected for removal or infected branches pruned to reduce the spread of the disease into healthy trees. The majority of this treatment would occur on the perimeter of previous lodgepole pine clear-cuts that are fully stocked with sapling sized lodgepole pine regeneration". To meet Forest Plan Canada lynx standards, sanitation would only occur on trees that have self pruned at least 2 feet above the average snowline, and no longer provide high quality snowshoe hare habitat. Thinning activities are not expected to change the current character of the habitat. As the crowns have lifted above mean snow depth, this habitat is of lower quality, and foraging value will not be affected.

Three miles of temporary road construction are proposed to implement the planned activities. Out of those 3 miles, .6 miles occur on existing road templates that have established open corridors in the forest. An additional .7 miles occur in non-habitat. That leaves 1.3 miles of temporary road construction in lynx winter habitat or other habitat. The associated potential tree clearing on that amount of road correlates to a total of 2.5 acres of lynx habitat that could be affected. The roads will not be open to the public during the life of the sale, and will be obliterated after the sale is complete. Obliteration consists of ripping and seeding the roadbed. When temporary roads occur in lodgepole pine or aspen stands, natural regeneration would occur faster than in a spruce-fir stand. Temporary loss of lynx habitats will have a negligible affects on lynx. However, it should be noted that once obliterated, recovery of this habitat may take 20-25 years.

Clear-cutting, and prescribed fire activities, will result in a 1.3 percent increase in the amount of currently unsuitable lynx habitat within the LAU, bringing the total within the LAU to 2.5 percent of lynx habitat. Other activities will result in the degradation of habitat value within the LAU, but will not convert habitat to an unsuitable condition. This project meets the standards and guidelines of the LCAS, and therefore its effects are determined to be insignificant and/or discountable to the Canada lynx.

Bailey and Parker Private Road Easements

Competing predators already have access into the project areas via the compacted Deer Creek Road (Parker Property, Miners Creek Road (Bailey Property) and other roads and trails near these sites. Lynx no longer have a competitive advantage in the vicinity of either project area, and therefore the minor increase in snow compaction that will occur from granting the easements will result in little effect to lynx, and should not rise to the level of "take."

The proposed actions discussed above will result in minor increases in snow compaction within the Snake River LAU. However, snow compaction is already occurring adjacent to these private parcels, which has effectively eliminated any spatial segregation prior to the proposed actions. Therefore, it is the Service's determination that the effects to Canada lynx that will result from the proposed action are insignificant and/or discountable to lynx.

Derby Mesa Wildlife Prescribed Fire

This project is designed to, among other things, restore a natural fire regime to a ponderosa pine ecosystem. The action under review will only be conducted one time, but may take several years to complete. The BA states that the proposed action will result in the conversion of "other" lynx habitat to an unsuitable condition, and the habitat being affected will be returned to a ponderosa pine habitat type (Giezentanner, USFS 2003, pers. comm.), and is not considered lynx habitat. Additionally, prescribed fire will remove shrub habitat in proximity to Douglas fir stands, which currently provides some foraging capability for lynx. The project will occur within the Derby Mesa LAU, and could result in effects to summer forage capability of the LAU. The action will result in a 0.002 percent loss of "other" lynx habitat, which is available for summer foraging and travel. It is likely that this change will be permanent with the return of a natural fire regime, which will maintain the ponderosa pine character of the habitat.

Direct Effects

The proposed action will result in the permanent conversion of 49 acres of "other" lynx habitat to an unsuitable condition within the LAU. No other effects to lynx habitat are anticipated by this action.

Indirect Effects

Summer habitat conditions for snowshoe hare will be reduced somewhat by the action, however, in it's current condition, the 49 acres of "other" lynx habitat would be considered marginal, and does not support substantial hare densities. Habitat conditions for alternative prey, such as the red squirrel, will be maintained through the retention of large, cone bearing, trees.

Although the project will result in the permanent loss of "other" lynx habitat, the loss will be within a buffer area around Douglas fir habitat, and may have only marginally contributed to the ability of the Derby Mesa LAU to support lynx. With the return of a natural fire regime to this habitat type, it will result in the maintenance of a ponderosa pine type, with the retention of large cone bearing trees, which will retain some value to lynx through alternative prey species. The post-project conditions outlined in the BA will result in the conversion of "other" lynx habitat to an unsuitable condition, raising the percentage of unsuitable habitat within the LAU to 3.1 percent of lynx habitat within the LAU. Habitat converted to unsuitable is still well within LCAS standards for maintenance of lynx habitat for the Derby Mesa LAU, and therefore will result in effects that are insignificant and/or discountable to lynx.

Little Box Project

Approximately 30 percent of the canopy would be removed within three cutting units, totaling 60 acres. This would increase the amount of sunlight reaching the ground. Initially, within the first few years, there would be an increase in the amount of grasses, forbs and shrubs. Subalpine-fir would be the first conifer species to regenerate. It would take approximately 15-25 years for the fir to grow above snow level, when it would begin providing winter foraging habitat. Removing 30 percent of the canopy of live spruce trees would reduce the habitat quality for lynx prey species, including snowshoe hare and red squirrel. Trees that would be selected for removal include those trees that are currently infected with spruce bark beetles. Infested trees would probably live another 2-3 years if they were not removed during harvesting operations. Standing dead trees, and dead/down trees would not be removed from the cutting units. This would help provide habitat structure for lynx prey species. The proposed action would reduce the canopy in the Little Box units, however, as stated above, the trees that are being removed would be dead in 2-3 years. Maintaining down trees within the units, as well as the creation of down woody material as a result of logging slash, stumps, etc. would increase the amount of down woody debris for the red squirrel.

It is estimated that this area would provide suitable denning habitat within 40 to 60 years. At this time interval, there would be an established canopy of trees (with a canopy closure greater than 40 percent), and a fairly substantial component of down woody material.

Habitat Attributes following Proposed Action and Buford/New Castle Project								
LAU Name	National Forest Acres	Lynx Habitat Acres	Denning Habitat Acres	Winter Foraging Acres	Other Habitat Acres	Currently Unsuitable Acres	% of LAU that is lynx habitat	% Unsuitable
Bar HL	95,928	35,338	14,790	14,809	5,194	545	35.6%	1.5%

The figures displayed above account for both the Buford/New Castle blowdown harvesting and the Little Box harvesting, which should both be completely implemented by the end of 2003.

Harvesting of the Little Box units, and a portion of the Buford/New Castle units would be taking place concurrently in the fall of 2003. The Little Box units are adjacent to some of the blow down units that are being harvested in the Triangle Park area as part of the Buford/New Castle project. This would increase the amount of disturbance to lynx potentially utilizing the area. Both of the projects would be completed in 2003, so this disturbance is viewed as a short-term effect.

After both the Little Box and the Buford/New Castle projects are completed, it is clear that the Bar HL LAU will still be capable of supporting lynx. Habitat effectiveness will be reduced within the project areas, and a small portion of habitat has been rendered unsuitable from the blowdown event and subsequent salvage operation (Buford/New Castle Project). Sufficient denning and winter foraging habitat will still be available to lynx, and standards and guidelines within the LCAS will continue to be met post-project. The effects of the Little Box Project are insignificant and/or discountable.

Markley Hut Reconstruction

The elimination of the existing hut would create conditions suitable for the eventual restocking of the site by lodgepole pine. Initially, several mature lodgepole pines would be dropped in the area immediately surrounding the site to allow safe disposal (by burning in a large bonfire) of non-recyclable materials present in the hut. Consequently, in the short term, there would be a net decrease in lodgepole pine habitat. Over the long term, the site would likely be restocked by lodgepole pine, given the scarification resulting from destruction activities. Scarified soils provide ideal habitat for restocking by pines.

The construction of the new hut will result in the cutting of several lodgepole pines for the access road and at the hut location. The number of trees to be removed has been minimized by locating the hut in a natural clearing, however, additional trees will be removed to the south and west of the new building to allow sun penetration and solar heating of the hut. The net short and long term impact of the clearing of trees for the new hut and access road will result in a decrease of no more than ½ acre in mature lodgepole pine habitat and increase of no more than ½ acre of

mountain meadow type habitat. The new hut will sleep the same number of persons, so there will be no increase in human use of the hut.

The access road will not be graded; the access will simply be improved through removal of several trees and boulders to allow vehicle passage. Best Management Practices will be followed during construction to minimize contribution of sediment to the Express Creek drainage. A gate will be placed at the junction of the new access road and the Express Creek road to prevent non-essential vehicle access. Direct impacts of the proposal on vegetation would be: 1) The restoration of less than ¼ acre of the lodgepole pine stand at the location of the existing hut, and 2) The conversion of approximately ½ acre of lodgepole pine forest to mountain meadow.

Consequently, the cumulative impact of the project will be the conversion of approximately ¼ acre of lodgepole pine forest to mountain meadow. The elimination of the existing hut will largely cancel out effects of the construction of the new hut and access road. In the short term there will be a net decrease in mature lodgepole pine trees resulting from cutting trees at the existing location and at the new location. However, this effect will be immeasurable at the landscape scale. In the long term, once the existing hut location becomes restocked by lodgepole pine, there will be little remaining impact from its removal.

Very minor habitat disturbance will result from the proposed action, and involves less than 2 acres of lynx habitat. Only 2.5 percent of the Maroon Bells LAU is in an unsuitable condition (baseline), and as a result of the proposed action, unsuitable habitat will increase by 0.0015 percent. This change is insignificant to lynx, because the change in overall percent of lynx habitat in an unsuitable condition will be indiscernible. All standards and guidelines of the LCAS are currently being met, and will continue to be met after completion of the project. The effects of this action are clearly insignificant and/or discountable to the Canada lynx.

Vail Ski Area 2003 Mountain Pine Beetle Control Timber Sale

Based on the most recent lynx habitat mapping, the White River National Forest estimates that that 47 percent of the Eagle Valley LAU is lynx habitat. Of that 47 percent, about 9 percent is considered unsuitable habitat. All of the proposed harvest will be in mature lodgepole/aspen forests that are lacking a significant understory. These stands and “tree islands” are not considered lynx forage habitat due to the lack of understory. Consequently the proposed action will not reduce the amount of suitable foraging habitat for lynx within the LAU and the project is consistent with the LCAS standard for maintaining suitable foraging habitat.

Based on the most recent lynx habitat mapping on the White River National Forest, it is estimated that about 26 percent of the forested lynx habitat in the Eagle Valley LAU is suitable lynx denning habitat. The project area does not contain suitable lynx denning habitat because little course woody debris exists in the area. Additionally, the project area receives high daily recreational use, which would likely prevent lynx from denning in the area. There will be no loss of suitable denning habitat as a result of this project. The project is therefore consistent with the LCAS standard with regard to maintaining denning habitat.

Lynx movement: The proposed action will not create any barriers to lynx movement. The partial removal of the overstory will make the units more open. During the daytime there is so much recreational activity in the project area that is unlikely a lynx would move through the area. The proposed cutting of trees will make some tree islands more open and incrementally degrade these areas for lynx travel. Although these "tree islands" are not considered diurnal security areas, they may provide enough security for lynx to move through the area.

Diurnal security: As previously mentioned, the "tree islands" in the project area do not function as diurnal security for lynx. Therefore, this project will not affect diurnal security areas.

Snow compaction: As discussed in the environmental baseline, the entire project area lies within the Vail Ski Area boundary and the Beaver Creek Ski Area boundary and is heavily skied during the snow season. Consequently, the entire area is interlaced with compacted snow trails. Removal of dead, dying and some live trees may allow the amount of skiing into some of the "tree islands" and increase snow compaction. However, the project area lies entirely within an existing ski area and is therefore exempt from the LCAS standard of "no-net increase in groomed or over-the–snow routes and snowmobile play areas".

The Vail Ski Area 2003 Mountain Pine Beetle Control Timber Sale project is in accordance with the standards and guidelines of the Lynx Conservation Assessment and Strategy. This project will not affect winter forage habitat, denning habitat, diurnal security areas, or increase snow compaction outside of the ski area. The component of lynx habitat that will be affected is 319 acres of "other" habitat. The only potential effect will be in the form of degrading areas that may provide travel cover for lynx moving through the area, but still meets conservation measures recommended in the LCAS. This project will result in insignificant and/or discountable effects to the Canada lynx.

Effect to future denning habitat and winter forage: The proposed action would remove dead and dying trees resulting in a stimulation of the understory growth of conifer and aspen. Removal of future downed logs by commercial harvesting of trees may reduce some cover that might encourage hares to use the tree islands. Downed logs will be left in those units with substantial commercial timber harvest. These changes to lynx denning and winter forage habitats are discountable and will not have any adverse influence on the Eagle Valley LAU to function as lynx habitat.

Frisco Nordic Center

The peninsula where the Nordic Center is located is a heavily used recreation area with specific management application. Although additional snow compaction will occur, it is within an existing ski area allocation. There is very little structure to the forested area on the peninsula, and lacks security habitat for lynx. Movement capability of lynx on the peninsula is still possible, although there is limited high quality foraging habitat available. The project will result in a temporary loss of summer foraging capability resulting from the conversion of 32 acres to an unsuitable condition. Winter foraging habitat will be affected by pre-commercial thinning activities, however, given the highly fragmented nature of the peninsula, and the high level of use, as well as a possible barrier to movement from Highway 9, there is a low likelihood that a lynx would venture onto the peninsula. Also, winter foraging habitat value will not be completely lost by precommercial thinning activity, but will be incrementally reduced. This reduction in winter forage habitat capability is considered insignificant related to the level of activity on the peninsula, and the fact that any competitive advantage held by lynx, has long been lost on the peninsula.

The amount of lynx habitat converted to an unsuitable condition is insignificant (32 acres or 0.08 percent). Post construction standards of this LAU are within the standards and guidelines, 5.58 percent unsuitable and 16 percent denning habitat. Although habitat values on the peninsula where the Frisco Nordic Center is located will be reduced, the baseline condition of the area has questionable value for lynx. The Frisco Nordic Center project will result in insignificant and/or discountable effects to the Snake River LAU, and therefore lynx.

South Game Creek Land Exchange

The transfer of 2.71 acres of Federal land to private ownership in exchange for 280 acres to Forest Service jurisdiction will be a beneficial effect to lynx. No linkage areas will be negatively affected, nor the functionality of the Eagle Valley LAU or the Camp Hale LAU as lynx habitat.

The proposed land exchange will be in accordance with the standards of the LCAS, and will result in beneficial effects to suitable foraging habitat, denning habitat, diurnal security areas, travel habitat or habitat connectivity. In exchange for the 2.71 acre Federal parcel of highly degraded unsuitable lynx habitat, the Forest Service will acquire 280 acres of suitable lynx habitat within the Eagle Valley LAU and the Camp Hale LAU. The transfer of 2.71 acres of Federal land to private ownership is insignificant and/or discountable and will not have any affect to the functionality of the Eagle Valley LAU as productive lynx habitat. The addition of 280 acres will result in a beneficial effect to lynx by increasing the amount of suitable habitat within the White River National Forest, as well as allowing continuity to land management within the White River National Forest.

West Lake Creek Land Exchange

The net effect of the proposed West Lake Creek land exchange would be an increase in the quality and quantity of lynx habitat on the White River National Forest. Specifically, the exchange would result in the White River National Forest acquiring a larger acreage of higher quality and more remote habitats for a parcel surrounded by private lands along the lower elevational boundary of the Forest. However, the significant, beneficial aspect of this exchange would be Forest's acquisition of two parcels (A and C) that are likely important for landscape level lynx movements, a critical issue in the Southern Rockies Ecosystem. The proposed action would also be consistent with all applicable measures in the LCAS (Ruediger et al. 2000) and the revised Forest Plan.

The beneficial affect on lynx and lynx habitat would result from the preservation of habitat values by precluding future development on those parcels. This includes foraging, diurnal security, denning, and habitat connectivity values through isolated private inholdings (Parcels A and C), each located within a landscape linkage. Furthermore, while habitat values on the selected Federal parcels (Parcels 1 and 2) would be removed from Forest Service management, most existing lynx habitat values on that parcel would also be preserved via the non-federal party's proposed deed restriction or conservation easement.

Although the BA disclosed changes in unsuitable habitat conditions, these were pre-existing conditions prior to the exchange and not the result of vegetation management by the Forest Service. The net increase in unsuitable habitat conditions in the Brush Creek LAU might have future management implications within this LAU. The proposed action will result in beneficial effects to the Canada lynx, in that the parcels lost to Federal management have deed restrictions and conservation easements associated with them, which may result in the habitats maintaining their overall function for lynx, and that lands acquired by the Forest Service will result in increased continuity of the overall habitat conditions within the 3 LAUs.

Woods Lake Hydroelectric Project

The preponderance of activities associated with this utility special use permit involves travel by the permittee to the facility, and annually operating and maintaining the facility in the spring, summer, and fall. The primary direct effect to lynx includes potential encounters with individuals in spring, summer or fall. Activity at Woods Lake or the power facility are not anticipated to occur in winter, however, the Federal Energy Regulatory Commission re-licensing renews previous authorizations of year-round power production activities. It is possible that facility maintenance will occur during early and late season conditions of snow cover that may cause limited snow compaction on existing right-of-ways and roads. Snow compaction would result from existing uses and would not result in a net increase in snow compaction within the Fryingpan North LAU.

The project determination received Service concurrence on 27 December 2002, after the December 26, 2002, court decision. The project fell under Screen number 2, Special Use

Authorization. For this screen, the project occurs within lynx habitat, has the potential to affect lynx or lynx habitat, but is not located in a landscape linkage. No lynx habitat will be modified during facility operations. The operations are covered under a renewal of a non-recreation special use authorization that permits year round operation, although historic operations have occurred in summer only. Given the latitude to operate in winter, and that in the past, operations were limited to spring, summer, and fall, the proposed action will result in effects to lynx during early and late snowfall conditions. Although snow compaction may occur in early spring and late fall, these affects are insignificant and/or discountable to the Canada lynx, because, at this time of year, the Canada lynx does not usually have the competitive advantage of deep snow conditions until later on in the winter season.

Missionary Ridge Burned Area Timber Salvage Project

Direct and indirect effects of the Missionary Ridge Burned Area Timber Salvage Project to Canada lynx is made with reference to the relevant standards and guidelines provided in the LCAS. Relevant lynx habitat types, and predicted changes by alternative, are displayed in the BA. We identified three activities that may directly or indirectly affect lynx: temporary roads, loss of denning habitat and grazing. Interrelated activities, such as human presence, are also discussed where appropriate.

There can be direct and indirect effects from the construction of temporary roads. The direct loss of habitat from vegetation removal can reduce the amount of suitable habitat for both lynx and their associated prey base. Disturbance from logging trucks and human presence could deter lynx from using the area. Winter logging could indirectly increase competition from opportunistic predators (e.g., coyote, mountain lion and/or bobcat) by creating snow compacted access into lynx winter forage habitat.

The possible direct and indirect effects from creating the 3.5 miles of temporary roads would be discountable for the following reasons: 1) The area that would be impacted from the temporary roads has been severely reduced in its ability to support lynx or their associated prey base, 2) The small intermittent patches of lynx habitat within the action area would not be sufficient in supporting lynx or its prey, and 3) Snowshoe hare are the primary food source for lynx in the Southern Rockies. For snowshoe hares to occur, a necessary understory component is needed for survival. Where lynx habitat is considered suitable within the action area, the Missionary Ridge Fire has eliminated this understory component.

Snow compaction and the associated access for opportunistic predators are also considered to be discountable for the same reasons previously discussed. Since the area has been so severely degraded, competition is unlikely to occur, due to a lack of prey.
Prior to the MRF, all three LAUs contained the necessary amount of denning habitat. The necessary amount of denning habitat per LAU is no less than 10 percent of available lynx habitat. The post-fire timber harvest would not reduce the amount of denning habitat to percentage (<10 percent) considered to adversely affect lynx.

The Forest Service predicts that the amount of denning habitat within the area of the MRF will steadily increase as the remaining trees fall and become part of the down woody component (table below). Within 2-3 years after the fire, standing dead trees outside of harvest units and those non-merchantable trees remaining within harvest units will begin falling. The snag fall-rate would steadily increase for the next 10-20 years. Depending on species and exposure to the elements, this rate may vary. In the long term, only trees that are well sheltered from the elements and greater than 20 inches diameter at breast height (dbh) are expected to remain standing.

Consequences of Alternative 4 on Snags

	Acres and Percent of Burned Acreage Harvested (ac / %)	Estimated # Trees Harvested	Estimated # / % of Snags Remaining Post-harvest (assuming no trees fall)	Estimated snags remaining per acre (> 10" DBH)
Pre-Fire			409,415	
Alt 4	4132 / 9%	165,280	1,023,433 / 86%	16.6

The indirect effects of harvesting dying aspen trees will be the production of rhizomes as a natural survival response in aspen. These succulent rhizomous shoots will attract domestic livestock. The browsing of livestock on the rhizomes can impede the regeneration process, which can inhibit snowshoe hares from re-colonizing the area. To prevent this from occurring, the Forest Service will monitor grazing impacts. If Forest Service biologists determine that regeneration is being impeded, livestock management within the burn area perimeter will be subject to change consistent with meeting LCAS and Forest Plan standards and guidelines. These changes will allow regeneration to occur until it is determined that domestic livestock grazing will no longer inhibit the regeneration process.

The effects of the Missionary Ridge Burned Area Timber Salvage Project will have a negligible effect on Canada Lynx. We consider the amount of denning and suitable habitat converted to unsuitable to be insignificant. All three LAU's will still provide lynx habitat, consistent with recommended standards and guidelines of the LCAS. As regeneration occurs and the remaining snags fall, the Missionary Ridge burn area will be more productive for both snowshoe hare and Canada lynx.

The LCAS describes standards and guidelines that the Forest Service has agreed to consider for the conservation of lynx. Three LAUs, the Animas, Bear Creek and Upper Florida River will be affected by the proposed project. The Animas and Bear Creek LAUs are both presently 5 percent "unsuitable". Post-fire timber harvest will increase this to 8 percent for both LAUs. The Upper Florida LAU is presently 3 percent "unsuitable" and post-fire timber harvest will increase this to 4 percent. All three LAUs are well under the 30 percent unsuitable threshold recommended by the LCAS.

An important component of any LAU is the percentage of denning habitat. The LCAS recommends that a LAU should be composed of at least 10 percent denning habitat. Prior to post-fire timber harvest, the Animas, Bear Creek and Upper Florida River LAUs each contain 21, 19 and 36 percent denning habitat, respectfully. Less than 1 percent of the denning habitat in each LAU will be affected by the post-fire timber harvest. Prior to the MRF, 4.4 snags existed per acre (>10 dbh). Post-fire, this number increased to 13.9 snags per acre (>10 dbh). As the residual dead and dying trees from the harvest fall over, this will create high quality denning habitat. The small, discountable amount of denning habitat lost in the implementation of this project would eventually be recovered and within 10 years and likely surpass pre-fire conditions. The denning habitat component in all three LAU's will not be reduced below the 10 percent recommended by the LCAS.

Millswitch Vegetation Management Project

Within the 10,898-acre diversity unit, 1,085 acres of mature and old growth forest habitat is considered potential habitat for lynx denning. Where spruce/fir stands are to be harvested, the remaining overstory canopies would not be favorable for future lynx denning habitat. In contrast, harvest units that retain a higher level of canopy cover would have a greater potential for future denning habitat. In all of the units, down woody material would be retained, and snags, snag replacement trees, large diameter old trees, downed logs and upturned stumps would compose the necessary down woody component for lynx denning habitat.

Within group selection, shelterwood, and commercial thinning units, harvest would remove some trees that are potential nesting, denning and/or foraging trees for red squirrels (alternate food source for lynx). Snags, snag replacement trees, large diameter old trees, downed logs, upturned stumps, squirrel middens, and trees with visible wildlife use signs will be specifically maintained in the diversity unit to minimize loss of nesting, denning, and foraging sites for red squirrels. Retaining some slash, whether lopped and scattered, crushed during machine scarification, or piled, will maintain hiding cover for lynx, snowshoe hare, and other small mammal prey species.

Early succession forest habitats provide important lynx foraging habitat. The harvest of selected trees would stimulate growth in the remaining trees and the growth of seedlings. These early succession forests would provide important habitat for snowshoe hare and other lynx prey species. Snowshoe hares are known to seek out young dense conifer thickets to feed on seedlings and saplings and protect themselves from cold weather and predators. These new foraging areas would be adjacent to mature forest stands allowing lynx to hunt along edges while providing escape cover. Pre-commercial thinning will only take place in stands that no longer provide foraging habitat for snowshoe hare.

Topographic features that may be important for lynx movement include primary ridge systems, prominent saddles, riparian corridors, narrow forested mountain ridges, plateaus, and forest stringers that link more extensive areas of lynx habitat. Since the harvest units within these areas are small and sufficient suitable habitat will remain, the affect from harvesting this area would have negligible effect to the travel corridor.

Riparian areas would retain their vegetative cover and continue to serve as travel connections for wildlife. Widespread harvest and associated activities over the proposed project area could have a negative effect on lynx movement. Mitigation to restrict activities to a single area by creating subdivisions within the sale area and restricting activities as much as possible to a single subdivision have been proposed, and should keep any potential effects at an insignificant level.

Approximately 1.63 miles of new specified road and up to 2.3 miles of temporary road construction are proposed in the Millswitch Vegetation Management project. New and temporary road construction will result in the loss of potential lynx habitat by reducing forest cover. This will be a temporary loss of habitat as these roads will be obliterated or physically closed. Temporary roads and the .5 miles of specified new road will be obliterated upon project completion. The other 1.13 miles of specified road will be physically closed. Physical closure will consist of gates, boulders, logs, slash and other debris to mask the roadbed and discourage any future use. Although short-term loss of lynx habitat would occur, regeneration would eventually reestablish the area as lynx habitat. Affects to lynx from these roads would be similar to those expected from forest openings created by timber harvest. Daytime avoidance of new roads, harvest units, and logging haul routes by lynx may occur while these areas are open and active. Disturbance from recreation use in potential lynx habitat is expected to be minor. A few hunters on foot may use these roads, but other recreational use is not expected to have an adverse affect on the ability of lynx to use the area.

Timber harvesting activities occur during the winter months, winter access to lynx habitat is unlikely to change for either humans or competing predators such as lions, coyotes, and bobcats. Access to proposed harvest units is by existing roads that receive recurring use by snowmobiles resulting in compacted snow routes in most winters. Snow plowing to allow timber harvest would be along these same routes, and would not change accessibility of competing predators.

The proposal to close and/or obliterate 5.98 miles of roads that are currently open to motorized travel would benefit the lynx. Road and road use impacts such as human disturbance and access into lynx habitats, and habitat degradation particularly of aquatic and riparian habitats will be reduced. Lynx use in mature forest habitats immediately adjacent to road corridors proposed for road closure or obliteration may increase. As closed roads revegetate, the regeneration of tree seedlings, shrubs, and herbaceous vegetation in the roadbeds would improve potential foraging habitat for the snowshoe hare and lynx. Once roads are closed to motorized vehicles, firewood harvesting along road corridors would essentially stop. Over time, snags and downed logs that are desirable for lynx and their prey species would increase along these road corridors over current levels.

Road obliteration is expected to reduce sedimentation sources and therefore improve riparian, wetland, and aquatic habitats for lynx prey species over the long term as roads revegetate. In the short term, ripping roadbeds, bringing slopes back to contour, and removing culverts would result in a temporary increase in sedimentation to water sources and disturbance of water quality in locations where current roads cross or are within approximately 100 feet of water sources. Use of watershed conservation practices (R2 WCP Handbook) would minimize potential impacts

to water sources until banks, slopes, and roadbeds are stabilized with vegetation. Actual open road density will decrease from 1.6 to 1.1 mile per square mile. Protection measures for riparian areas, wetlands, and stream habitat that may be used by lynx (as foraging habitat or travel connections) or their prey species (including snowshoe hare) are incorporated into the design of the timber sale and mitigation measures. Proposed harvest units are outside of riparian and aquatic habitats and have adequate vegetated buffers in between. No additional impacts on lynx and prey species that may use riparian or aquatic habitats are expected due to timber harvest activities with the use of watershed conservation practices (R2 WCP Handbook).

Current conditions within the Millswitch diversity unit have resulted in areas where lynx habitats are less likely to function properly due to open road densities and trail use. The Millswitch Vegetation Management will close and/or obliterate 5.98 miles of roads that are currently open to motorized and mechanized travel. Open road density would decrease from the current 1.6 miles per square mile to 1.1 miles per square mile. The reduction in open road miles would improve conditions for lynx by reducing the human presence, reducing impacts to riparian habitats, and increasing available winter forage habitat.

Precommercial thinning in most situations is not recommended by the LCAS. However, where snowshoe hare foraging habitat has or is declining, the LCAS suggests thinning treatments to stimulate understory growth. The acres selected for commercial and precommercial thinning would result in maintaining or creating forest stands that would retain much of their original forest structure. Where thinning has been prescribed, we believe it is appropriate and will have a beneficial effect on snowshoe hare population by stimulating understory growth.

Chester LAU and Poncha Linkage Area

The majority of the proposed Millswitch vegetation management activities will occur in forest stands classified as suitable lynx habitat. None of the treatments in spruce/fir habitat would result in an unsuitable habitat classification for lynx. Conversions of suitable habitat to unsuitable habitat will only occur in lodgepole pine. This short-term conversion (2.0 percent to 2.4 percent) of suitable lynx habitat to an unsuitable condition would occur in the Chester LAU. When the harvested and specified (temporary) new roads are reclaimed and vegetative regeneration occurs, these areas will become high quality snowshoe hare habitat (suitable). This short-term loss of suitable habitat includes up to 109 acres of denning habitat (composed of lodgepole pine) and 100 acres of low quality (other) lynx habitat.

The Millswitch diversity unit lies entirely within the Chester LAU. This LAU contains approximately 52,125 acres, approximately 42,818 of which have been classified as potential lynx habitat. Of those lynx habitat acres, 41,968 acres or 98 percent are currently suitable lynx habitat. Less than 850 acres or 2 percent are currently unsuitable but capable of providing lynx habitat with a future change of vegetation structure. Acres classified as potential lynx habitat include 17,368 acres (40.6 percent) identified as denning habitat, 3,580 acres (8.4 percent) as winter foraging habitat, and 21,020 acres (49.0 percent) are classified as low quality (other) lynx

habitat. Low quality lynx habitat is defined as being capable of providing, but currently not, denning habitat or winter foraging habitat.

Associated within the Chester LAU is the 6,106-acre Poncha Pass linkage area. This linkage area contains 3,447 acres (63.0 percent) denning habitat, 268 acres (4.9 percent) winter foraging habitat, and 1,753 acres (32.1 percent) low quality (other) lynx habitat. No currently unsuitable acres occur within this portion of the LAU. Based on the amount of suitable habitat impacted by this project, we consider its affects to be discountable. Of the 5,468 acres of suitable lynx habitat, only 89 acres will be converted to an unsuitable condition. This results in a total of 1.6 percent of the available lynx habitat within the Poncha Pass linkage area to be in an unsuitable condition. Habitat connectivity and functionality within and between LAUs and linkage areas will not be inhibited by this project.

Considering all the past, present, and future activities occurring in the Millswitch diversity unit, the Chester LAU, and the Poncha linkage area, we consider the effects from the Millswitch Vegetation Management project will be discountable. The functionality of the Chester LAU and the Poncha linkage area as lynx habitat will not be degraded by this project. There remains within the Chester LAU and Poncha Pass linkage area an abundant amount of suitable, winter forage and denning habitat for lynx. Lynx denning habitat within the Chester LAU will still comprise at least 40.3 percent of lynx habitat, winter forage habitat would not be negatively affected and will increase over the long term, and other lynx habitat will decrease by only 0.1 percent, all within LCAS standards and guidelines.

Lynx foraging habitat would improve with the removal of overstory trees in harvested units resulting in increased understory vegetation and seedling regeneration following harvest and accelerated growth of existing young trees. This lynx foraging habitat does not include sagebrush habitat, but consists of spruce-fir and some high elevation riparian habitat. Distribution of winter foraging habitats will improve over time as regeneration in the clear cuts begins to provide foraging opportunity for snowshoe hare.

Snowshoe and Ruby Grazing Allotment Permit Renewals

The role of riparian wetlands in the ecology of lynx is not clearly understood. These areas have been speculated to function as a forage area by providing the necessary habitat for prey species, such as red squirrel. The intensity of livestock grazing use may reduce forage resources available to snowshoe hares by altering the structure and/or composition of the plant community. This affect can also occur in high elevation shrub-steppe habitats where grazing can influence plant community composition, structure and vigor.

The effects from grazing will not convert any suitable lynx habitat into an unsuitable condition. The current conditions of lynx habitat in the Anthracite LAU and the Beckwith LAU are meeting the standards of the LCAS. Proactive measures are being taken to prevent further degradation of "other" lynx habitat. This is in reference to those riparian areas that have been degraded by past grazing activities. These degraded areas compose approximately less than 1 percent of the total

area of each LAU. If rangeland conditions are identified as being "unsatisfactory", the Forest Service will promote an upward trend within 5 years. A monitoring program is in place to evaluate changes in plant composition. This will allow the Forest Service to identify areas that are approaching unsatisfactory conditions and make adjustments to prevent further degradation of the habitat. With existing forest plan standards and guidelines to maintain quality vegetative characteristics, and measures required to improve range condition if standards and guidelines are not met, this project will result in insignificant and/or discountable effects to the Canada lynx.

Galloping Goose Trail

The first 200 yards of the trail is within lynx denning habitat. The remaining part of the trail will be in "other" habitat. Affects to lynx habitat include the removal of some vegetation, an increase of human activity in the area and the conversion of suitable habitat to an unsuitable condition. The removal of vegetation may affect the ability of snowshoe to forage in the area, resulting in hares to move to another area. The increase of human activities may affect the ability of lynx to use the area for denning. Although lynx are tolerable to some human activities, female lynx will typically not use areas that receive a significant amount of human activity. Since this trail will not be open for winter use, there will no increase in snow compaction.

The LCAS describes standards and guidelines that the Forest Service has agreed to consider for conservation of the lynx. The Galloping Goose Trail project will not impair the Matterhorn LAU to function as lynx habitat. The amount of lynx habitat converted to an unsuitable condition is discountable (<3 acres or 0.00007 percent). Post construction standards of this LAU are well within the standards and guidelines, 2.7 percent unsuitable and 52 percent denning habitat.

Although there will be an increase in human activity within the action area, the area already receives intense human disturbance from nearby Highway 145 and Highway 3. Human disturbance associated with the construction of the trail will be temporary. We have determined that the increase in human activities associated with the new trail to be discountable and will not negatively affect the biology of lynx within the Matterhorn LAU.

The Nature Conservancy's Small Tracts Acquisitions

The proposed project would not result in modified forest cover or increased human disturbance, except in the area near the south end of the tract where the residence and access road would be constructed on land adjacent to the tract. The total area of the Forest Service tract affected would be 0.2 acres or less. Construction and occupation of the residence could slightly reduce the amount of habitat available to lynx in the area, and could slightly reduce or alter lynx movement through the area. Based on the size of affected area (<1 acre), the proposed project is unlikely to cause a significant impact on lynx.

The acquisition of this small parcel of land is insignificant to the overall condition of the Matterhorn LAU and would not affect any identified lynx travel corridors. The various components of the Matterhorn LAU are well within the standards and guidelines recommended

by the LCAS. After the acquisition, less than 1 percent of the Matterhorn LAU will be categorized as unsuitable.

James Lucas Small Tracts Act/Land Interchange Project

The Federal government will lose management control of 0.71 acres of lynx foraging habitat. Because of this it will be assumed that all 0.71 acres will become unsuitable for the lynx to use. This would reduce the number of foraging acres in the LAU to 26,221 or 27.6 percent of the total LAU. This number represents a very minor and insignificant amount of land that would be lost to the lynx.

As a result of this sale, 0.71 acres of public land will become private and no longer managed by the Federal government. Because of the proximity of continual human activity, the likelihood that a septic system will be installed and the expansion of the existing cabin will occur, it must be assumed that the lynx will no longer use the entire parcel of land, which is currently foraging habitat. However, due to the size of the parcel and it's location near other, occupied cabins and roads, the loss of this land will not reduce the amount of foraging habitat available to the lynx by any appreciable amount (< 0.1 percent of the entire LAU). This action would have an insignificant and/or discountable effect on the foraging behavior of any lynx that may be in the area.

Sheep Creek II Vegetation Management Project

Prescription fire, in most cases, would convert mature, densely stocked lodgepole stands to early seral patches of regenerating forest. Once regeneration begins, stands have the potential to provide forage habitat in the future.

Clear-cuts would remove all cover needed for the lynx for denning and by the snowshoe hare, which the lynx utilizes as a prey base. By removing denning and foraging habitat, clear cuts would render the habitat unsuitable for lynx for long-term use.

The remaining prescriptions (OGE, OR, CCP, and CCP) would leave some trees in place as patches and reserves, providing some structure. However, it is unlikely that lynx would utilize these areas as denning until regeneration into forage habitat in a mosaic of patterns has occurred in the surrounding stands.

As a result of the action, 93 acres of denning habitat would be impacted by the project. Of these acres, 44 would result in foraging habitat, 25 in 'other' habitat and 24 acres would be rendered unsuitable.

As a result of the action, 426 acres of the 603 acres of affected winter forage habitat would be impacted by the project. Of these acres, 220 would result in 'other' habitat and 206 acres would be rendered unsuitable. However, 44 acres would be converted into forage habitat from denning..

As a result of the action, 8 acres of 'other' habitat would be impacted by the project. However, 245 acres would be converted into 'other' habitat as a result of the degradation of winter forage and denning habitats.

Sheep Creek II

Red Feather Lakes LAU	Baseline before Action (acres)	Number of acres Affected	Net change (acres)	Percent of Habitat change
Denning Habitat (acres)	22,355	93	-93	-0.42%
Winter forage (acres)	44,435	603	-221	-0.50%
Other lynx Habitat (acres)	15,626	11	284	1.82%
Total LAU (acres) including non-habitat	106,960	29,477	-418	-0.39%

Lynx may be directly affected by this action by losing potential habitat, both denning and foraging. The reduction in potential habitat for the snowshoe hare will also adversely affect the lynx. The implementation of this project could also directly affect any lynx in the area by disrupting their normal behavior to avoid fire, logging and other silvicultural activities.

Indirect effects from harvest or prescribed burning include loss of existing and potential denning, foraging, hiding, and thermal cover. As canopy closure within the project area is opened, the denning and foraging habitat will be degraded. Opening of the denning habitat would convert the area into winter foraging habitat, which requires less canopy closure. Foraging habitat may be improved as a result of the project over the long term, but in the short term, prey habitat may be reduced as a result of the reduction in number of fewer snags and subsequent downed logs available. The proposed enhancement of aspen stands is expected to increase the amount of available forage for lynx. Road construction may indirectly affect lynx by providing access into areas where lynx historically had a competitive advantage.

The amount of habitat treated is minimal over the large scale and the locations of the treatments are primarily outside of suitable lynx habitat. The project is not located in or near any landscape linkage areas. While there may be some short-term effects to any lynx that may be utilizing the area, fuels reduction, old growth enhancement, and aspen treatments are expected to improve conditions for lynx by increasing the amount of forage available to them. The time it will take for these actions to become beneficial for the lynx will vary depending on the treatment type, vegetation, and location. However, it is reasonable to assume that between 5-20 years would be needed for the treated area to regenerate to the point where it would support snowshoe hare and other prey species. In addition, treatment of dense, even-aged stands, of lodgepole pine is recommended in the Lynx Conservation Assessment and Strategy. The proposed project also

aims to create additional forage near existing denning habitat, also recommended by the LCAS. The project meets LCAS standards and guidelines. The LCAS was designed to assist action agencies to determine the effects their actions may have on lynx. Criteria used in the screen are very conservative in relation to standards and guidelines found in the LCAS.

La Manga Beetle Salvage Sale

The proposed action is located in the Rito-Archuleta and Victoria-Chama LAUs. Sixty-three acres of denning habitat may be affected by the proposed project through the removal of beetle killed trees and trees that are at high risk of being infected due to the timber sale. This is equal to 0.22 percent of the total denning habitat in the combined LAUs (0.06 percent in Rito-Archuleta and 0.36 percent in Victoria-Chama). However, the timber sale may create future winter foraging habitat once regeneration of the vegetation occurs. The proposed action will not directly affect winter foraging habitat. The proposed action may also treat 6 acres of "Other" lynx habitat. The combined LAUs currently have 31,828 acres of "Other" lynx habitats (16,556 in Rito-Archuleta and 15,727 in Victoria-Chama) and removal of 6 acres by means of this treatment (5 in Rito-Archuleta, and 1 in Victoria-Chama) would reduce those acres to 31,822 which represents a decrease of 0.02 percent of the total available "other" habitat. The Rito-Archuleta LAU currently has 10.8 percent (4,356 acres) of its lynx habitat in an unsuitable condition, below the 30 percent maximum. The proposed action will not exceed the 30 percent unsuitable threshold. The Victoria-Chama LAU currently has 1.9 percent (766 acres) of its lynx habitat in an unsuitable condition, below the 30 percent maximum. The proposed action would increase these acres to 820, which would represent 2.0 percent of the LAU.

A timber sale would remove most cover needed for the lynx for denning and cover used the snowshoe hare, which the lynx utilizes as a prey base. By removing denning and foraging habitat, this action would lessen the value of the affected area for lynx for long-term use.

Lynx may be directly affected by this action by losing potential habitat, both denning and foraging. The reduction in potential habitat for the snowshoe hare will also affect the lynx. The implementation of this project could indirectly affect any lynx in the area by disrupting their normal behavior to avoid project activities.

Direct effects from harvest of trees include loss of existing and potential denning, foraging, hiding, and thermal cover. As canopy closure within the project area is opened, the denning habitat will be degraded. Opening of the denning habitat would convert the area into winter foraging habitat, which requires less canopy closure. Foraging habitat may be improved as a result of the project over the long –term, but in the short term, prey habitat may be reduced as a result of the reduction in number of snags and subsequent downed logs available. Although the proposed mitigation would make the area more useful for the lynx than without it, due to the destruction of denning habitat and the creation of, possibly poor, forging habitat, the area become less useful to the lynx.

The amount of habitat treated is minimal over the large scale and the locations of the sale are primarily outside of suitable lynx habitat. The acreage that will be involved in this sale, in addition to the expected cumulative effects of future projects, does not exceed the 30 percent unsuitable standard in the LCAS. While there may be some temporary effects to any lynx that may be utilizing the area, the proposed project will create additional forage near existing denning habitat, also recommended by the LCAS. The Lynx Project Decision Tree was designed to assists action agencies to determine the effects their actions may have on lynx. The criteria used in the screen are very conservative in relation to standards and guidelines found in the LCAS.

Buffalo Pass Campground-Tres Cabras Timber Sale

The proposed action is located in the B-C LAU. The proposed action will directly affect 0.02 percent of the winter foraging habitat in the B-C LAU, rendering it unsuitable or 'other' habitat. "Other" lynx habitats are those considered to be of "lesser quality" than foraging or denning habitat, but are still useable (i.e., suitable), primarily for forage. The LAU currently has 33,564 acres of "Other" lynx habitat. By removal of 24 acres of 'other' habitat and the addition of 6 acres as a result of the degradation of winter foraging habitat, this action would reduce 'other' acres to 33,546, which represents a decrease of 0.05 percent. The LCAS planning standards indicate that if more than 30 percent of the lynx habitat within an LAU is currently unsuitable, no further reduction of suitable conditions is to occur. The B-C LAU currently has 6 percent of its lynx habitat in an unsuitable condition, below the 30 percent maximum. The proposed action will not exceed the 30 percent standard for unsuitable habitat.

This project would remove cover used by the snowshoe hare, which the lynx utilizes as a prey base. By removing foraging habitat, this action would render the habitat unsuitable for lynx for 5-25 years.

Lynx may be directly affected by this action by losing potential habitat. The reduction in potential habitat for the snowshoe hare will also adversely affect the lynx. The implementation of this project could also directly affect any lynx in the area by disrupting their normal behavior to avoid project activities.

Project actions will degrade suitability as winter foraging habitat to summer foraging habitat in the short-term. However, project activities are expected to promote understory growth and density of vegetation in the Buffalo Pass Campground units and should increase lynx alternative prey species over time and is expected to recover as improved winter foraging habitat in 20-25 years. The Tres Cabras unit is neither expected to increase nor decline in lynx foraging value, as it is not suitable lynx foraging habitat and removal of infected trees in this unit is expected to open the canopy up and give the stand more of a late successional ponderosa pine character.

The cumulative change in the LAU is expected to be 0.15 percent degrading of winter foraging habitat from the North Park Salvage project and 0.12 percent temporary conversion of winter foraging habitat into summer foraging habitat from the Buffalo Pass/Tres Cabras project. The LAU does not exceed the 30 percent cap of unsuitable habitat.

Tree removal is planned during frozen weather conditions to avoid as much soil disturbance as possible. However, the project may be delayed into warmer conditions. While this will create additional soil disturbance to the area, it is expected to result in less damage than if left for firewood gathering. Effects to lynx are expected to be the same if delayed, except for no increase in snow compaction along roads. Snow compaction resulting from winter logging activities is exempted from meeting LCAS standards and guidelines.

The amount of habitat treated is minimal over the large scale. The acreage that will be involved in this project, in addition to the expected cumulative effects of future projects, does not exceed the 30 percent unsuitable standard set by the LCAS. However, there may be some temporary effects to any lynx that may be utilizing the area at the time the project is implemented resulting in a modification of lynx behavior. However, the possibility of direct harm to any lynx as a result of this project is very remote. The LCAS was designed to assists action agencies to determine the effects their actions may have on lynx. The criteria used in the screens are very conservative in relation to standards and guidelines found in the LCAS.

Spruce Hole Blowdown Small Sale

The proposed action is located in the Rito-Archuleta and Victoria-Chama LAUs. Four hundred-thirteen acres of denning habitat may be affected by the proposed project through the removal of beetle killed trees and trees that are at high risk of being infected due to the timber sale. This is equal to 0.26 percent of the total denning habitat in the combined LAUs (2.10 percent in Rito-Archuleta and 0.78 percent in Victoria-Chama). However, the timber sale may create future winter foraging habitat once regeneration of the vegetation occurs. The proposed action may also treat 3 acres of "Other" lynx habitat. "Other" lynx habitats are those considered to be of "lesser quality" than foraging or denning habitat, but are still useable (i.e.; suitable), primarily for forage. The combined LAUs currently have 31,828 acres of "Other" lynx habitats (16,556 in Rito-Archuleta and 15,727 in Victoria-Chama) and removal of 3 acres by means of this action treatments (2 in Rito-Archuleta and 1 in Victoria-Chama) would reduce those acres to 31,825 which represents a decrease of 0.01 of the total available "other" habitat. The Rito-Archuleta LAU currently has 10.8 percent (4,356 acres) of its lynx habitat in an unsuitable condition, below the 30 percent maximum. The Victoria-Chama LAU currently has 1.9 percent (766 acres) of its lynx habitat in an unsuitable condition, below the 30 percent maximum. The proposed action would increase these acres to 808, which would represent 0.93 percent of the LAU, within LCAS standards.

Implementation of the project has the potential to degrade denning habitat and limit foraging habitat until regeneration occurs. By opening up the canopy in denning habitat, the habitat would be converted to winter habitat, which requires less canopy closure. Winter and other lynx habitat would not be impacted to the point where this habitat no longer functions as winter or other habitat. No additional habitat would be rendered unsuitable as a result of this project.

A timber sale would remove most cover needed for the lynx for denning and cover used the snowshoe hare, which the lynx utilizes as a prey base. This action would lessen the attractiveness of the area for lynx for long-term use.

Lynx may be directly affected by this action by losing potential habitat, both denning and foraging. The reduction in potential habitat for the snowshoe hare will also adversely affect the lynx. The implementation of this project could also directly affect any lynx in the area by disrupting their normal behavior to avoid project activities.

Direct effects from harvest of trees include loss of existing and potential denning, foraging, hiding, and thermal cover. As canopy closure within the project area is opened, the denning habitat will be degraded. Opening of the denning habitat would convert the area into winter foraging habitat, which requires less canopy closure. Foraging habitat may be improved as a result of the project over the longterm, but in the short term, prey habitat may be reduced as a result of the reduction in number of snags and subsequent downed logs available. Although the proposed mitigation would make the area more useful for the lynx than without it, due to the destruction of denning habitat and the creation of, possibly poor, forging habitat, the area become less useful to the lynx. Road construction may indirectly affect lynx by providing access into areas where lynx historically had a competitive advantage.

The amount of habitat treated is minimal over the large scale and the locations of the sale are primarily outside of suitable lynx habitat. The acreage that will be involved in this sale, in addition to the expected cumulative effects of future projects, does not exceed the 30 percent unusable standard set by the LCAS. While there may be some temporary effects to lynx that may be utilizing the area, the proposed action will create additional future forage habitat near existing denning habitat, also recommended by the LCAS. The LCAS was designed to assists action agencies to determine the effects their actions may have on lynx. The criteria used in the screens are very conservative in relation to standards and guidelines found in the LCAS.

<u>Outfitter and Guide Special Use Permit Renewal</u>

The preponderance of activities associated with recreation permits involves travel by permittees. One key potential direct effect of Outfitter and Guide-Special Use Permits activities to lynx includes potential encounters with individuals, which might result in mortality of an individual, exemplified in the LCAS as shooting of Canada lynx. Potential winter encounters likely occur with Canada lynx. The likelihood of such encounters resulting in mortality is predicted to be relatively low due to the rarity of individuals or habitat occurrence and the potential for Outfitter and Guide-Special Use Permittees to control any potentially negative actions.

Many winter activities are allowed on designated routes or trails, however, some dispersed activities do occur. Lynx are most vulnerable to human encounter where authorized uses coincide with suitable habitat. Many activities are somewhat “naturally” segregated from Canada lynx habitat, in that, the most suitable, dense forest sites or dense tall willow are not typically suitable for many activities such as snowmobiling, snowcat operation, skiing and some

Nordic skiing. Many of these activities do utilize existing trails through or surrounding dense forest sites or tall willow riparian sites. Many of the Concentrated Winter Use Areas that the Forest has mapped, occur as non-habitat. There may be temporal segregation of permitted uses and Canada lynx due to lynx typically being most active during nighttime or crepuscular (dawn/dusk) hours. Humans in winter are most active after 9:00 a.m. to early afternoon. Snowmobiling is innately loud enough to where lynx could conceptually be alerted upon being approached by active machines. Alerted individuals would likely seek the most immediate cover or just remain still.

Studies outside of Colorado specifically evaluated and discussed Canada lynx responses, behavior, and relative resiliency to humans on the Lake Louise Ski Area in Banff National Park, Alberta, Canada, and other ski areas in Canada. Their study indicated "studies and anecdotal encounters with lynx are almost uniform in describing the mild if not indifferent reaction of individual lynx to human presence." Mowat (in Ruggerio et. al. 2000:281) discusses Canada lynx's relative acceptable tolerances of humans, and found through his studies in Canada that they could not detect changes in lynx movement patterns or home range despite their constant, repetitive and daily traveling through the study area to check traps and locate animals (lynx).

The most probable potential direct effects to lynx are adversities to their suitable habitats (especially prey habitat) exemplified by some timber harvest and natural or prescribed fire, or maturing of some conifer types (lodgepole pine) and deciduous (aspen) types. Permittees utilize existing trails and some historical campsites, which would not be suitable habitat in-and-of-themselves, are sometimes inclusions within surrounding suitable habitats. The most potential change that would occur is the gathering of incidental down woody material for camp firewood near designated campsites.

The most probable indirect effect to lynx associated with special use permits is the potential occupation of non-habitat within or immediately adjacent to suitable habitats by humans for prolonged periods of time, especially key seasonal habitat components such as lynx spring denning or summer rearing habitat. The relative large degree of suitable habitat being denning results in many opportunities for lynx to avoid conflicts during denning and rearing.

All potential and proposed additional Service Days are all assumed to use the same existing Forest infrastructure as existing permits currently use during summer, fall, and winter.

Upon reviewing the proposed project and its expected effects, it is the Service's opinion that by issuing new permits to outfitters for the Rio Grande National Forest, an increase in human activity through more service days may affect the lynx at very low levels. While there is no anticipated increase in snow compaction, habitat modification, or nighttime activities, the increase in human presence for an increased length of time may minimally affect the lynx by altering its normal behavior. The lynx may have to go further to forage and den and may have to expend energy during the winter to avoid contact with snowmobiles and other winter activities. However, because of the temporal separation between the human activities (day use) and the times when the lynx are most active (dusk and dawn), inadvertent encounters will be largely

avoided. If there are encounters, injury or death to lynx is highly unlikely. More probable, the lynx will change location. Finding suitable habitat after being displaced would be no more difficult after the permits were issued than currently, because no habitat manipulation is expected to occur as a result of the action. Ruediger, et al. states that human activities do not significantly affect lynx behavior, therefore, the effects of the proposed action are likely be insignificant and/or discountable to the Canada lynx.

The existing Outfitter and Guide-Special Use Permit and proposed additional service days have been found to be consistent with Rio Grande National Forest Land and Resource Plan direction, standards, and guidelines, as well as LCAS standards and guidelines.

Aspen Ridge Road Easement and Plowing Authorization

Transfer of the existing road easement, as described in the description section, will not have immediate direct impact to lynx. An anticipated interrelated activity, the construction of a residential home with a guest lodge, would directly impact lynx by reducing the amount and quality of other lynx habitat. An increase in road traffic and associated recreation use is likely to occur and may reduce the quality of lynx habitat.

A road designation change to allow winter snow plowing/grooming would increase snow compaction and associated activities along with an increase in the duration of compaction. Snow compacting activities such as snow plowing, snowmobiles, cross-country and Nordic skiing, snowshoeing, dogsledding, and snowcat use within lynx habitat may increase the likelihood for competing predators such as coyotes, bobcats, and mountain lions to access lynx habitat in the winter; increasing competition for prey and opportunity for direct interference.

The transfer of the road easement would not directly impact lynx, as the easement already exists. However, the transfer to a new owner would likely result in a loss of other lynx habitat on private property due to development and associated factors such as an increase in traffic. The loss of other lynx habitat is expected to be minimal and will not likely result in effects to surrounding patches of poor quality denning and foraging habitat.
The proposal to plow Forest Road 212 during the winter may affect lynx. Currently the road receives light use by snowmobiles. This use results in a route that is either continuously compacted or periodically compacted through the winter. Plowing this road would result in a permanently compacted route through the winter.

Because the road does receive snow compaction, it is unlikely that plowing would give any more opportunities for competing predators to enter lynx habitat than already exists. If compacted routes are concentrated and associated uses remain on designated routes, predators would likely be inhibited in movement off the trails into more highly suitable lynx habitat. Increase in competition from other predators in lynx habitat due to snow compaction is therefore unlikely.

Management actions have not changed more than 9.71 percent of lynx habitat within the LAU to an unsuitable condition within a 10-year period. The implementation of the project will result in

a loss of habitat but the loss is insignificant and/or discountable to lynx. Denning habitat will be maintained in patches larger than 5 acres, in accordance to project planning standards in the LCAS, comprising at least 10 percent of lynx habitat

Box Creek Watershed Restoration Project

This project proposes to treat 5,743 acres (4.3 percent) of lynx habitat within the LAU. Currently, 22 percent of the LAU is denning habitat and project actions will alter <1 percent to result in a temporary small reduction. Winter forage habitat will be altered in similar fashion. The proposed action is within the 15 percent LCAS standard for a 10-year period.

Vegetation Treatments: Overall, implementation of proposed treatments would result in changing vegetation structure short-term and existing forest biomass would be diminished considerably. These changes may adversely affect lynx indirectly by reducing the abundance of prey species habitat. Snowshoe hare and red squirrels are apt to decline because reproductive sites, hiding cover and feed would be diminished due to cutting and burning of palatable plants, insects and diminishing the number of available reproductive sites. Accordingly, composition as well as the abundance of prey species would change. The small mammal community may shift from hares and red squirrel to voles and gophers in the short-term. This prey shift would likely have an adverse influence on lynx hunting success, especially during winter, because voles and gophers remain largely beneath the snowpack whereas snowshoe hares occur on the surface and are therefore more accessible to lynx. Thus, regeneration harvests represent a transient deficit in snowshoe hares and other prey but also ensure future replenishment of habitats highly suitable for hares. However, projects are planned in areas that currently provide low quality habitat for snowshoe hares and may not be providing lynx with its primary prey.

Subalpine Zone: Stand replacement fire is proposed for a large subalpine zone unit to promote establishment of young aspen and spruce-fir seedlings with a mosaic of overstory conifer retention. Treatment strategy follows historic burn patterns to develop connectivity of foraging habitat between the montane and subalpine communities. Snag and CWD retention/recruitment will create additional denning habitat. The temporary loss of foraging habitat from the burn would impact a resident lynx by removing prey and therefore displace the animal as described above. The displacement would be temporary situation in the immediate area. Retention of spruce/fir and lodgepole in the project area containing secondary prey habitat would help offset the impact. The subalpine community will provide future down wood in the form of standing fire-killed and large diameter trees increasing the likelihood of denning habitat as well as foraging habitat.

Montane Zone: Mature lodgepole stands lacking well-developed crowns and understory vegetation are targeted for regeneration harvests in the montane zone. Because of the depauperate conditions in the area, impacts to lynx are unlikely but still may contribute to displacement. Like the impacts in the subalpine area, the minimal impacts to lynx would be temporary but at the same time may result in loss of some cover for denning and foraging habitat.

Beneficial: Burn prescriptions in the low quality lynx habitat (lodgepole pine cover type) will be creating new lynx denning habitat where there currently is none by killing trees and allowing them to fall over and become CWD. Retention of all fire mortality and live trees will accelerate the development and expansion of denning structure in these stands. It is expected, based on previous treatment response within the project area and vicinity, that both live and dead trees will be uprooted by wind within a few years post burn, improving future denning conditions. After the initial impacts from mechanical and prescribed fire, the overall canopy closure will decrease, resulting in an increase in large forage on the ground, and at typical snow depths during the winter.

Partial harvests mimicking understory fires will reduce large areas of mistletoe infestation and thin stands to allow the growth of larger trees that will ultimately provide CWD important to lynx denning habitat while retaining existing CWD to maintain potential denning habitat.

Project activities will contribute to future lynx denning habitat by retaining small areas of insect/pathogen mortality (less than 5 acres) and creating snags and downed logs for escape and thermal cover for kittens. Denning and foraging habitat will be created within 3-6 miles of each other providing connectivity of foraging habitat between the montane and subalpine communities. As a result, habitat conditions for lynx are expected to improve from current conditions.

In the long term, regeneration harvesting would create future forests that provided both prey and the concealment needed by lynx to hunt successfully. Grass, forbs, brush and small trees would reoccupy areas opened by logging creating vegetative edges (a place where 2 vegetation cover types meet) defining the boundary between regenerated forest and adjacent mature trees may well provide improved opportunity for lynx to locate and catch prey. Lynx habitat in the western mountains consists of two structurally different forest types occurring at opposite ends of the stand age gradient. Lynx require early successional forests that contain high numbers of prey (especially snowshoe hares) for foraging and late-successional forests that contain cover for kittens (especially deadfalls) and for denning ”

Removal of overstory conifers and applying fire to stimulate understory growth will create prey species habitat of young lodgepole patch stands in approximately 20 years. Green trees in partial cut units will continue to grow and ultimately provide denning habitat when they fall to the ground. Low intensity burns in the montane zone will promote understory development of sagebrush, mountain shrubs, aspen, and lodgepole while retaining overstory conifers for lynx movement.

Fires/disturbance: In the short-term, disturbances associated with project activities like noise and smoke from fires could displace lynx temporarily. This effect would most likely be minor as literature suggests lynx are tolerant of humans and not displaced by their presence (Rudiger et al. 2000). Adult lynx are very mobile and could easily leave the area of a prescribed fire. Although smaller lynx kittens may have difficulty escaping a fast moving fire, fire activities will occur only during the fall and winter months when kittens will have grown to a size allowing mobility.

Prescribed fire has the potential to consume CWD and some smaller trees that provide lynx denning and foraging habitat. However, prescriptions are designed to be either understory or patchy fires. Neither of these prescriptions will consume the entire denning and foraging habitat within treatment units.

In summary, project activities have been designed to mimic historical natural disturbance events and patterns at a scale that may produce long-term beneficial effects to the lynx species and other wildlife. The activities will initially impact lynx by removing habitat that is mostly dysfunctional from the perspective of lynx. Shortly after the treatments, early seral stands will regenerate and eventually provide lynx foraging habitat while maintaining CWD important for prey cover and lynx denning habitat. Similar activities occurring 20 to 30 years ago in the area have produced snowshoe hare habitat. In the long-term, the proposed project will create additional denning and foraging attributes simultaneously and adjacent to each other through the design of the harvest and fire prescriptions and adhering to standards in the conservation measures. While providing these long-term benefits, the proposed action reduces the potential of negative effects of treatment by employing no permanent firebreaks, machine construction fire lines, or creation of roads that will remain open after the project is completed. Further, treatment units will not be re-entered for salvage treatments following initial treatments, thus, maintaining additional future opportunities for creating denning habitat for lynx.

Road Reclamation: The action would reduce road miles and density by the following: Summer open motorized routes on Federal lands within lynx habitat would be reduced from 35.87 (table A7 below) to 11.61 miles (table A8 below), representing a decrease of 68 percent from the existing condition. Total winter open motorized routes on Federal lands within potential lynx habitat would be reduced to 5.31 miles, representing a decrease of 85 percent from the existing condition. This would represent a density of 0.71 and 0.33 miles of motorized routes on Federal lands per square mile of potential lynx habitat within the Box Creek Watershed in the summer and winter, respectively. This action would benefit lynx by reducing habitat fragmentation and associated effects of fragmentation described in the Baseline section.

Proposed road closures and seasonal restrictions would result in a density of 0.71 and 0.33 miles of motorized routes on Federal lands per square mile of potential lynx habitat within the Box Creek Watershed in the summer and winter, respectively. Therefore, this project will result in a substantial decrease (68 percent summer and 85 percent winter) in the amount of open motorized roads, which will result in a decrease in disturbance to lynx.

Approximately 40 feet on either side of roads within the project area will receive treatments that will reduce overstory cover along roads in lynx habitat. However, a 200-foot no-treatment buffer will provide cover adjacent to these 40 ft treatment areas along roads. As a result, forage habitats for snowshoe hares will likely increase, while cover adjacent to roads will be maintained. This will have short-term adverse effects due to loss of cover. The long-term effect would be to bring about herbaceous growth that will provide cover and increase snowshoe hare habitat.

The number or density of roads required to affect lynx are not well known. However, negative effects of roads have been documented such as removal and fragmentation of habitat, changes in animal behavior, animal displacement and competition by other predators and road kills. It is reasonable to assume the increase of new roads and road density within the watershed has decreased habitat effectiveness and capability within the project area and the closure of some road will improve habitat quality for lynx and other wildlife.

The proposed project road reclamation will result in no net increase in groomed or designated over-the-snow routes and play areas and open motorized routes will be reduced below the two miles per square mile density suggested in the LCAS used for prioritization of seasonal closures or restrictions. An overall beneficial effect to lynx will result from this action since it does not convert currently non-system roads into Federal system roads, and there will be an overall reduction in open motorized route miles within potential lynx habitat by 68 percent (summer) and 85 percent (winter).

Project mechanical and fire treatments may have minor short-term negative effects from noise and fire activity disturbance. Less than 1 percent of lynx denning and foraging habitat will be made ineffective by the vegetation treatments. The project design will maintain most existing lynx denning and foraging habitat, within LCAS standards and guidelines, while creating additional future denning and foraging habitat and connectivity. In the long-term the restoration of plant communities in the watershed to historical conditions would favor lynx prey species and other wildlife. These actions in turn are expected to affect Canada lynx and its habitat beneficially. However, because of the potential for short-term effects, and the project proposal is consistent with the LCAS conservation measures, the Service concludes the impacts from disturbance and vegetation treatments are likely to be insignificant and/or discountable.

Green Ridge Mountain Pine Beetle Treatment

Direct, Indirect Affects of Habitat Change: The proposed logging treatments will decrease forest structure in the following ways: tree-spacing density, canopy closure, fine woody debris and dead trees. Logging would remove many large live pines that make up the dominant overstory in lodgepole stands. Anticipated losses of forest overstory trees from proposed logging would generally not render those stands unsuitable for lynx. Nonetheless, the proposed action would directly affect lynx winter foraging and other habitat. Clearcuts would reduce stand attributes to the lowest level of all the treatments but would not eliminate large live (or dead) trees altogether (please see BE, Appendix E for live tree and snag retention requirements).

The proposed action calls for 98 percent of the treatments to be conducted in other habitat and 1 percent of treatments are proposed in unsuitable habitat. As for winter foraging habitat, 44 acres (less than 1 percent of all acres proposed for MPB treatment) would be impacted. Most winter foraging acres would be treated by shelterwood preparatory cuts or sanitation/salvage cuts, and would not be changed from suitable winter foraging to unsuitable habitat. However, 16 acres of winter foraging habitat would be clear-cut in the proposed action and thus made unsuitable by logging treatments in the short term.

The following table displays the number of acres, by habitat type, that would be affected by the proposed action, if implemented. These acres represent the maximum area extent influenced and may overestimate actual habitat changes, as they are calculated from polygon areas that do not account for partial treatment within the boundary of an area.

Acres of lynx habitat affected by type

Alternatives	Lynx Habitat Type Affected by Proposed MPB Treatments (in acres)				
	Denning	Winter Forage	Other	Currently Unsuitable	TOTAL ACRES
Proposed Action	0	44	7944	90	8078

Overall, implementation of proposed logging treatments would result in changing vegetation structure short-term and existing forest biomass would be diminished considerably. These changes in forest vegetation conditions would have the following effects to lynx.

By cutting trees or snags and through impacts to understory vegetation, reductions in cover and structure may negatively affect lynx by reducing the abundance of prey. Overhead and near-ground removal of vegetation would decrease numbers of prey species by removing cover, decreasing palatable plants, reducing foliage insects and diminishing the number of available reproductive sites. In the action area, snowshoe hare and red squirrels are apt to decline because tree cutting would diminish reproductive sites, hiding cover and feed. Accordingly, composition as well as the abundance of prey species would change. The small mammal community may shift from hares and red squirrel to voles and gophers in the short-term. This prey shift would likely have a negative influence on lynx hunting success, especially during winter, because voles and gophers remain largely beneath the snowpack whereas snowshoe hares occur on the surface and are therefore more accessible to lynx.

In “other” or winter foraging habitats, six of the proposed seven logging treatments would modify existing forest conditions but would not change these habitats so completely as to render them unsuitable. Lynx habitat in lodgepole pine and aspen stands would be degraded but not removed, following treatment. Remaining vegetation structure (in the form of tree density, arrangement and species composition) would still be sufficient to provide functional cover and prey prospects for lynx. Thus, most logged areas would still be useful for lynx hunting, travel and dispersal in the spring, summer and fall even though prey availability and abundance may decline or prey species composition may shift. However, clear-cuts would eliminate suitable (other) habitat on 816 acres and 14 acres of winter foraging habitat (proposed action) in the short-term because a high proportion of existing vegetation would be completely removed. Clear-cut areas would become unsuitable habitat.

Clear-cuts would remove vegetative cover that is important for lynx security and hunting (Koehler and Aubry 1994). Although all clear-cut areas include reserve trees, they are expected to have inadequate overhead or ground cover for lynx activities. Koehler and Aubry (1994) suggest clear-cuts wider than 330 feet (100 meters) may be barriers to lynx movement. Most

proposed clear-cuts are less than 25 acres and so would be barriers of limited extent in the action area. Lack of ground and overhead cover would be an ephemeral impact from clear-cutting.

Beneficial: In the long term, clear-cuts regenerate new forests that provide both prey and the concealment needed by lynx to hunt successfully. Within 10 to 20 years, grass, forbs, brush and small trees would reoccupy openings where little vegetation remained following logging. At this stage of forest succession, the vegetative edge (a place where 2 vegetation cover types meet) defining the boundary between regenerated forest and adjacent mature trees may well provide improved opportunity for lynx to locate and catch prey. Known as edge effect, the transition area where two plant communities meet is typically more productive and has a greater variety of plants and animals than either plant community would by itself.

Beyond 20 years, the new sapling stands of lodgepole pine occupying formerly clear-cut areas are expected to be suitable wintering habitat for snowshoe hare. Vegetation development would be entirely sufficient for hares to fully re-colonize the former clear-cuts. Thus, clear-cuts represent a transient deficit in snowshoe hares and other prey but also ensure future replenishment of habitats highly suitable for hares. As explained by Koehler and Aubry (1994), "Lynx habitat in the western mountains consists of two structurally different forest types occurring at opposite ends of the stand age gradient. Lynx require early successional forests that contain high numbers of prey (especially snowshoe hares) for foraging and late-successional forests that contain cover for kittens (especially deadfalls) and for denning (page 86)."

Proposed partial cut and clear-cut treatments may serve to slow or reduce MPB population increases and thereby lessen the amount of tree killing expected in areas where no treatment would occur. Overall, logged stands (except clear-cuts) and post-outbreak stands may not differ greatly insofar as lynx (other) habitat is concerned.

In the short term, implementation of the Green Ridge Mountain Pine Beetle Treatment proposal would cause short-term adverse effects to 44 acres of winter foraging habitat and 7,944 acres of other habitat. Sixteen acres of the 44 acres will be converted to unsuitable habitat. Although vegetation management actions will reduce habitat quality within the LAU, this reduction is well within LCAS standards and guidelines of no more than 30 percent of unsuitable lynx habitat within a LAU.

Long-term, lynx habitat may be affected either neutrally or beneficially in the action area by maintenance of structurally and age-diverse forest stands as well as retention of some large live pines, consistent with guidance of the LCAS.
The impacts of this proposed action, within the action area, would cumulatively degrade habitat for lynx. However, the effects to lynx habitat from the combination of activities occurring in the action area are transient and vegetation alteration is almost completely limited to secondary (other) habitat, and is consistent with LCAS standards and guidelines.

<u>Lost Park Grazing Allotment</u>

The project analysis area does occur within lynx habitat. Although the proposed action will maintain compliance with the standards and guidelines found in the Routt National Forest Management Plan in maintaining stable vegetative foraging conditions, present management practices have modified the habitat and the purposed project will continue in that mode. The allotment does not occur within a key landscape linkage zone. This project will not result in the permanent loss or conversion of lynx habitat

Grazing and browsing by large herbivores in aspen stands and high elevation riparian willow communities may result in competition with lynx prey species. Domestic livestock and/or wild ungulates may change the structure and/or composition of native plant communities, thus changing their ability to support lynx and their prey (Ruediger et al. 2000). There have been no studies on dietary overlap between livestock and snowshoe hares, or response of snowshoe hares to cattle grazing (Ruediger et al. 2000). However, studies have been conducted on similar *Leporid* species demonstrating that competition could occur, depending on stocking rates. Domestic livestock grazing has been recognized as a factor influencing the decline or loss of aspen as a seral species in subalpine forests. Particularly in riparian areas within lynx habitat, large ungulate forage use levels may result in competition for forage resources to snowshoe hare and therefore indirectly impact lynx productivity (Ruediger et al. 2000).

Potential direct impacts may occur by predator control activities associated with domestic grazing. The Animal Damage Control of the Animal Plant Health Inspection Service-Wildlife Service (APHIS-WS) is allowed to manage livestock predation by coyote, red fox, black bear, and mountain lion. Requests to APHIS-WS to control other species of wildlife, or to control any species or individuals for purposes other than livestock predation, will be handled on a case-by-case basis after coordinating with the appropriate District Ranger and CDOW representative before such actions are undertaken. APHIS is allowed to control predation when caused by federally designated "threatened" species. Therefore, the potential for controlling predation by the Canada lynx does exist, and will be addressed through consultation between APHIS-WS and the Service.

The Lost Park Grazing Allotment project may affect prey base habitat by altering vegetative species composition and structure. Additionally, there is the potential for conflicts that may result by predator control activities associated with domestic grazing. The project will stay consistent with the LCAS standards and guidelines and all FMP therefore would result in insignificant and/or discountable effects.

<u>Weiham Driveway Construction</u>

The project will permanently convert approximately 0.1 acre of other habitat to unsuitable. The driveway will require winter season plowing for access. Snow plowing would increase snow compaction and associated activities of snowmobiling, cross-country and Nordic skiing and snowshoeing use within lynx habitat and may increase the likelihood for competing predators such as coyotes, bobcats, and mountain lions to access lynx habitat in the winter; increasing competition for prey and opportunity for direct interference. However, the habitat does not

represent high quality lynx habitat and is immediately adjacent to a plowed road. Due to the small scale of habitat that will be modified, the negative effects associated with winter plowing and snow compaction are likely to be minimal

The planned property development is located near a heavily used county road where levels of disturbance are commonly high. The property has little winter forage capability for snowshoe hare. The effect to lynx of possible permanent conversion of the five acres of low quality to unsuitable habitat in an area that has many existing disturbances is negligible.

The Weiham Driveway project will result in the permanent loss and conversion of 5.1 acres of other lynx habitat to unsuitable lynx habitat within the LAU (0.1 acres of Federal land and 5.0 acres of private land) but is consistent with the LCAS standards and guidelines and would therefore have only insignificant and discountable effects.

Bear River/Dunckley Pass/Lower Trout Creek Prescribed Burns

The proposed project does have the potential to negatively affect lynx by reducing and modifying other habitat that may provide lynx prey base and cover. The affects to lynx habitat will be short term, and will not affect the ability of the LAU to support lynx. The following table outlines the acres of lynx habitat that would be affected by the proposed prescribed burns.

Lynx habitat, in acres, affected by the proposed action.

Affected Lynx Habitat Acreages					
Lynx Habitats	Non-Habitat	Unsuitable	Winter Forage	Denning	Other
Bear River Burn	350	0	0	0	0
Dunckley Pass Burn	25	10	0	0	465
Lower Trout Creek Burn	15	0	0	0	385
TOTAL	390	10			850

The project will affect no more than 850 acres of "other" lynx habitat. Denning or lynx winter foraging habitat will not be affected. The 850 acres is 1.32 percent of the existing suitable lynx habitat in the LAU. This will increase unsuitable acres 6.5 percent, which is well under the 30 percent unsuitable standard. The project does not occur within a key landscape linkage zone. The action does meet the conservation measures addressing risk factors affecting lynx productivity in regards to general wildland fire management in the LCAS (Ruediger et al., 2000).

This project may affect prey base habitat by altering vegetative species composition and structure but is short term and stays well within the LCAS standards and guidelines. It is the Service's biological opinion the project effects would have insignificant and discountable effects.

Webster Pass Mining Exploration 2003

Access: Two of the drill sites and potential spur access roads occur within 0.06 acres of lynx denning and/or foraging habitat. Winter access may increase snow compaction on 0.06 acres of lynx habitat.

Disturbance: Disturbance from noise associated with the drilling activity, increased road traffic and human presence.

Effects of proposed action on vegetation: Four drill sites and spur access roads (if needed) would remove not more than 2,800 square feet of alpine grasses and forbs and 2,800 square feet of spruce-fir vegetation. Scree rock along 1,600 feet would be leveled to form a 12-foot wide roadbed, and two drill pads would be leveled as well, affecting approximately 19,840 square feet. Approximately 0.45 acres of scree habitat, 0.06 acres of alpine grasses and forbs, and 0.06 acres of spruce-fir forest would be removed or severely trampled by this project. A total of 0.57 acres would be involved in this operation.

Species Analysis

Loss of lynx habitat: The proposed operation would remove or damage up to 2,800 square feet of denning and/or foraging habitat for the lynx. Revegetation at this elevation can be difficult. Because of slow plant growth, the impacted area will likely not function as lynx habitat for several centuries. For the purpose of this analysis, the loss will be considered a permanent loss.

Potential disturbance from human activity and noise associated with the 24-hour operation. Several authors have indicated that lynx are generally tolerant of humans and human disturbance, including moderate snowmobile traffic and daily human use and presence in an area (Mowat, Aubry 1999). Most of the travel routes proposed for use are also open to the public and nighttime use already occurs on these routes. The proposed drill sites in lynx habitat are adjacent to National Forest Service Road 121. Large contiguous blocks of suitable habitat immediately adjacent to the drill sites may support movement through the project area as well as buffer noise from the operation. The project area is not located in a linkage area (Grode, USFS, pers. comm.).

Traffic changes or snow compaction as a result of road construction and maintenance. Ruggiero et al. (1999) states that lynx movement patterns are not affected by forest roads alone, but may be affected by widening or paving that lead to increased speeds or traffic volume. Minimal road maintenance includes some widening and drainages improvements, but the 4-wheel drive, high clearance nature of the road would not change and increased traffic volumes or traffic speeds are not anticipated. All newly constructed road sections would be closed and rehabilitated at the completion of the project. However, revegetation at this elevation is difficult. Increased snow compaction on 0.06 acres in lynx habitat may result from the public's use of two spur access roads, if these roads are not closed prior to winter.

The proposed project would permanently convert 0.06 acres of suitable lynx foraging and/or denning habitat to unsuitable. The impacts are only considered permanent due to lower

productivity of higher elevations. The loss of 0.06 acres of habitat is not measurable within the LAU, and the effects indiscernible.

Reclamation: Drill sites would be graded and vegetated. Roads would remain open until completion of all exploration, at which time they would be graded and vegetated where appropriate. Physical closures would be required on several of these roads. Although the project will result in very minor loss of habitat, the LAU will continue to meet LCAS standards and guidelines for maintenance of lynx habitat.

Mount Massive Route Stabilization Project

Recreational activities within the project area have the potential to affect wildlife populations through disturbance. In the short-term, disturbances associated with project activities from trail construction could disturb lynx currently in the area. However, noise would be minimal and comparable to public use of the trail as all construction will be done by hand tools. Any effect would likely be discountable, as lynx have been described as tolerant and not easily displaced by human presence (Rudiger et al. 2000).

The constructing and rerouting of the trails will directly affect lynx by removing vegetation from lynx habitat. The maximum overall route lengths under the alternatives will approach four and three miles for the North Halfmoon and Main Massive Routes respectively. In lynx habitat, new trail construction lengths are less than 1.5 miles for both routes. This represents less than 0.4 acres of affected lynx habitat. The proposed action will result in no net increase in groomed or designated over-the-snow routes and snowmobile play areas within the Tennessee Pass LAU.

The following tables list miles and acres lynx habitat type affected by project alternatives. Among the alternatives, 0.3 to 0.7 acres of existing trail would be closed and restored. Upon completion of the project, lynx habitat will contain fewer trail acres. This aspect of the project would result in beneficial effect to lynx by reducing human-caused disturbance and habitat fracturing. However, it is recognized that this amount of beneficial effect is very minimal.
Project Results For Potential Lynx Habitat Under Each Alternative.

ALTERNATIVE		LYNX HABITAT					
		CREATED		RESTORED		NET	
Number	Name	Miles	Acres	Miles	Acres	Miles	Acres
	North Halfmoon Alternatives						
A	No Action North Halfmoon	0.00	0.00	0.00	0.00	0.00	0.00
B	North Halfmoon West	0.43	0.05	0.15	0.03	0.28	0.02
	Main Massive Alternatives						
C	No Action Main Massive	0.00	0.00	0.00	0.00	0.00	0.00
D	Construct South Route	0.80	0.17	0.42	0.41	0.38	-0.24
E	Construct Modified South Route	0.87	0.21	0.32	0.31	0.55	-0.10
F	Colorado Trail Reroute	0.53	0.13	0.52	0.32	0.01	-0.19
D and F	Combination Alts D and F	1.33	0.30	0.94	0.73	0.39	-0.43
E and F	Combination Alts E and F	1.40	0.34	0.84	0.63	0.56	-0.29

Project Results For Lynx Denning Habitat Under Each Alternative.

ALTERNATIVE		LYNX DENNING HABITAT					
		CREATED		RESTORED		NET	
Number	Name	Miles	Acres	Miles	Acres	Miles	Acres
	North Halfmoon Alternatives						
A	No Action North Halfmoon	0.00	0.00	0.00	0.00	0.00	0.00
B	North Halfmoon West	0.15	0.03	0.00	0.00	0.15	0.03
	Main Massive Alternatives						
C	No Action Main Massive	0.00	0.00	0.00	0.00	0.00	0.00
D	Construct South Route	0.80	0.17	0.42	0.41	0.38	-0.24
E	Construct Modified South Route	0.87	0.21	0.32	0.31	0.55	-0.10
F	Colorado Trail Reroute	0.53	0.13	0.52	0.32	0.01	-0.19
D and F	Combination Alts D and F	1.33	0.30	0.94	0.73	0.39	-0.43
E and F	Combination Alts E and F	1.40	0.34	0.84	0.63	0.56	-0.29

Project Results For Lynx Foraging Habitat Under Each Alternative.

ALTERNATIVE		LYNX FORAGING HABITAT					
		CREATED		RESTORED		NET	
Number	Name	Miles	Acres	Miles	Acres	Miles	Acres
	North Halfmoon Alternatives						
A	No Action North Halfmoon	0.00	0.00	0.00	0.00	0.00	0.00
B	North Halfmoon West	0.43	0.05	0.15	0.03	0.28	0.02
	Main Massive Alternatives						
C	No Action Main Massive	0.00	0.00	0.00	0.00	0.00	0.00
D	Construct South Route	0.80	0.17	0.42	0.41	0.38	-0.24
E	Construct Modified South Route	0.87	0.21	0.32	0.31	0.55	-0.10
F	Colorado Trail Reroute	0.39	0.10	0.52	0.32	-0.13	-0.22
D and F	Combination Alts D and F	1.19	0.27	0.94	0.73	0.25	-0.46
E and F	Combination Alts E and F	1.26	0.32	0.84	0.63	0.42	-0.31

The Mount Massive Route Stabilization project will result in no net increase in groomed or designated over-the-snow routes or "play" areas and will reduce the overall trail length and area. In the long-term these actions are expected to beneficially affect Canada lynx and its habitat. The potential for short-term affects from disturbance, and removal of vegetation may result in minimal negative impacts to lynx. The proposed project would permanently convert 0.98 to 1.76 acres of suitable lynx habitat to unsuitable. This amount of habitat conversion is undetectable and is not significant to lynx. Due to the minimal amount and type of impacts, the Service has determined that the effects will be insignificant and discountable.

Dinner Park Timber Sale

Disturbance Effects: In Ruediger et al. (2000), lynx are described as "being generally tolerant of humans. Other anecdotal reports also suggest that lynx are not displaced by human presence, including moderate levels of snowmobile traffic." However, disturbance impacts are anticipated from short-term noise, commotion, or smoke produced by proposed fuel treatment actions, which may cause lynx in the area to leave the area.

Direct, Indirect and Cumulative Effects of Habitat Change: Taken as a whole, habitat affected by timber sale treatments would be small in area compared to the overall home range size of lynx. Nonetheless, the proposal does have slight potential to directly affect lynx other foraging

and travel habitats. Lodgepole pine stands and aspen groves are all suitable hunting areas for lynx, especially along edges where cover types meet.

The proposed timber sales would reduce canopy closure, woody debris and small trees, generally simplifying vegetation structure short-term. As a result, near-ground changes to vegetation are in turn likely to adversely impact small mammals by taking away cover and edible plants. For example, numbers of snowshoe hare are apt to decline somewhat after completion of the timber sale, because hiding cover, as well as food, would be reduced. On the other hand, some voles and gophers may respond positively to decreased brush and a flush of herbaceous growth induced by diminished overhead canopy. Accordingly, the composition of small mammal prey may shift from hares to voles and gophers in the short-term. Proposed removal of timber in the lodgepole stands are likely to negatively affect prey abundance or availability minimally, because of the less than optimum habitat conditions as identified.

Thinning and tree removal of mature lodgepole would reduce tree density within a fixed area; decreasing carrying capacity for red squirrels an alternate prey species for lynx. Planned retention of forked or multiple-topped pines would likely help counteract adverse effects to red squirrel habitat. Nonetheless opportunity for finding alternate prey would decline overall in the short-term. However, while structural complexity would be decreased for a time, plant growth and succession would gradually improve habitat conditions. The amount of sunlight reaching the forest floor will increase. Over a period of 3 to 15 years, understory grasses, forbs and shrubs would respond with increase in growth rate and abundance and with greater nutritional content. The quantity and quality of palatable forage would likely attract the preferred lynx prey of snowshoe hare.

Over the longer-term, young spruce fir trees and other vegetation would reoccupy new growing space created by openings and would have the potential to grow large. The residual mature lodgepole pines throughout the stand would increase in both diameter and height, due to the reduced competition among trees. In addition, damaging agents such as insects, wind and ice would operate to wound or kill lodgepole pines and other trees, adding habitat diversity in the tree canopy. Together, over a period of two or more decades, structural complexity, species composition and diversity would improve. Concurrently, prey abundance would increase, as would the potential for large tree structure defects to create coarse woody debris that provide useful dens to lynx.

To summarize, the direct effect of treatments will degrade lynx foraging habitat in the short term. However, degradation of habitat is not sufficient to result in total loss of the functionality of the habitat. In the long-term, over the next several decades, stand structural complexity should gradually increase. Future installments of sustainable timber management activities could be beneficial to stand complexity, provided that care is taken to retain some dead or defective live trees, and that accumulated debris on the forest floor is not completely removed. An overall enhancement in preferred forage quality and quantity is expected with implementation of the timber sale, over a 3 to 15 year period.

All proposed timber sale activity would modify existing conditions in "other" habitat but would not change this habitat type to non-habitat. In no case would currently suitable lynx habitat be changed by treatment actions so greatly as to render it unsuitable. The habitat may be degraded but not removed. Following treatment, remaining vegetation structure and composition will be effective for lynx hunting and travel, even though prey availability and abundance may be reduced or prey species composition may shift.

Considering the project at a larger scale that incorporates nearby acres including the Encampment LAU, affected by past, present and reasonably foreseeable timber harvests, the Dinner Park timber sale would not impair suitable habitat sufficiently to change it to non-habitat.

Lynx utilize linkage areas for weeks at a time and therefore need habitat that allows foraging and cover to sustain them while they range. The project's timber harvest will remove vegetation that provides cover and foraging opportunities to lynx. This would likely result in lynx not using the area and force them to take an alternative path that may require the lynx to expend more energy. Typically, prey species in linkages are a less desirable food source such as red squirrel in mature lodgepole as what is found in the project area. However, the effects of the timber harvest do not allow such severe cutting that the Sierra Madre Linkage would become dysfunctional as a passage are for lynx.

Implementation of timber sales in lodgepole pine and aspen cover types may cause short-term, direct habitat impacts to lynx. Negative effects that may occur include: slight decrease in prey abundance or shift in availability from one prey species to another and possible disturbance. The extended spatial and temporal distribution of timber cutting reduces impacts in any single locality and at any one point in time. Harvesting may in fact provide some benefits to small-scale horizontal heterogeneity over the long-term providing habitat for prey. As trees grow larger, their value as potential den trees increases. Therefore, in considering both potential negative and beneficial effects, the project would have short-term insignificant and discountable level of effect to lynx. In the long-term, lynx habitat may be affected either neutrally or beneficially in the action area, while also meeting LCAS standards and guidelines.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Breckenridge Ski Area Improvements

There are no reasonably certain cumulative effects within the action area warranting consideration from effects associated with the Proposed Action under current regulatory guidelines that would adversely affect lynx habitat.

White River Resort Special Use and Outfitter/Guide Permit Renewal

There are no anticipated cumulative effects, within the action area, that are reasonably certain to occur.

Allen Creek Project

The Forest Service does not anticipate any future State, private, or Tribal activities that are reasonably certain to occur within the action area.

Bailey, and Parker, Private Road Easements

Frisco Nordic Center: The City of Frisco plans to construct a winter biathlon shooting range on their peninsula property. The range would be located east of the day lodge, southwest of the water tank and within 1,000 feet (north) of State Highway 9. Until 2001, there was a small range set up at RJ's Vista, north of the Peak One Campground, but it was not designed. The new range will allow competitions closer to the lodge and highway, which will allow spectators or guests to attend with less difficulty. The range will be designed to accommodate more competitors and provide for increased safety.

It is not known at this time how much forest will need to be cleared for the range, but 1 acre should be adequate (winter foraging on latest map). It is likely there will be an increase in snow compacted ski trails to access the range, but they would have to be on private property, and the immediate area is already laced with groomed ski trails. Normally, shooting on these type ranges is only allowed during daylight.

Night skiing, however, is allowed on the city-owned trails. In the winter of 2002-2003, solar electric lighting was used on some of the trails. This program may expand in the future to cover more of the city trails and perhaps trails on NFS land.

A Nordic village is likely to be constructed in the vicinity of the current lodge. It will be in a currently developed area, however, some tree clearing may occur.

A ski jump hill will be cleared and developed. One to two acres of conifer forest may be cleared.

A multi-use conference center may be built in a currently undeveloped location. One to two acres of conifer forest may be cleared.

Although the cumulative effects, reported for this action will result in a net loss of habitat, increased fragmentation of the Snake River LAU, and likely additional snow compaction, these impacts are fairly concentrated around the Frisco Nordic Center, which is already a highly dissected area of the LAU. Due to the isolated location and poor habitat of the Frisco Peninsula, these projects will have an insignificant and discountable effect to lynx or their habitat.

Derby Mesa Wildlife Prescribed Fire

There are no cumulative effects anticipated, that are reasonably certain to occur, within the Derby Mesa LAU, that may adversely affect lynx.

Little Box Project

There are no known State or private future activities, reasonably certain to occur within or adjacent to the Bar HL LAU that would affect lynx, lynx movement or lynx habitat.

Markley Hut Reconstruction

An assessment of actions on-going and planned by entities outside the Federal government reveals little activity within the Maroon Bells LAU. No new State or county actions are planned. From a review of county-approved private actions, limited single-family home building is underway or foreseeable on private land parcels located within the LAU. Home building will occur along roads that follow the primary drainages within the LAU, including Castle, Maroon, Conundrum, and Fall Creeks.

There are no foreseeable private activities planned within the Express Creek Drainage, where the project is located. The majority of home construction is on the northern end of the LAU within 5 miles of Aspen, and at least 6.1 miles from the Markley Hut project area. The closest on-going single-family home construction is approximately 2 miles from the project area, north of Ashcroft. The home site is located on private land and is surrounded by vegetation mapped as non-habitat, including wet meadows, wetlands, aspen, and mountain shrub.

There are six other homes currently under construction, four are along Castle Creek Road: They are within 5 miles of Aspen, Colorado, and 6.1 to 8 miles from the project area. Two are located on Maroon Creek Road: They are two miles from Aspen and 10 miles from the project area, and one is located on Midnight Mine Road: It is three miles from Aspen and 8.6 miles from the project area.

In addition, three single-family home construction projects are planned along Maroon Creek Road (1), Conundrum Creek Road (1), and Little Annie Road (1). The foreseeable home construction will occur on the northern end of the LAU, also at least 6.1 miles from the Markley Hut project area.

White River National Forest did not map lynx habitat on private lands, therefore this information is not available for analysis of baseline distribution of habitat within the LAU. However, reconnaissance of the LAU reveals that home sites are located on private parcels largely surrounded by non-lynx habitat types that include wet meadows, wetlands, aspen, and mountain shrub. Effects associated with home building predominantly involve on-site habitat loss or alteration, potential disturbance to wildlife from activity at the home site, and disturbance associated with human travel to and from the site. Because these effects occur primarily in habitats mapped as non-habitat or private, and in areas not associated with lynx foraging or denning activities, cumulative effects to the LAU from private home building would be very minor and would fall under the definitions of insignificant and discountable. The amount of potential lynx habitat that would be affected by the cumulative impact of these anticipated actions is too small to be measured and would not have an overall affect on the use of the LAU by a resident lynx. The potential of any of the current or proposed development actions displacing a lynx, or creating a change in a movement pattern is very unlikely due to the low habitat value of the private lands. Furthermore, there is a low likelihood of a lynx being in the area of the developments while they are occurring.

Vail Ski Area 2003 Mountain Pine Beetle Control Timber Sale

There are no State or Tribal actions that are reasonably foreseeable within the Eagle Valley LAU. Private and/or local actions include the removal of dead and/or dying trees within two hundred feet of residence, but will have no effect on the various lynx habitat components of the Eagle Valley LAU.

Frisco Marina Expansion: The Town of Frisco plans to expand the existing marina. This will occur in non-habitat on the east end of Frisco, near the mouth of Tenmile Creek. Heavy residential and commercial development and Dillon Reservoir surround the immediate area; therefore, the project should have no effect to lynx.

Keystone Area: In the event the Ski Tip lift/run proposal is implemented, there would be a parking lot constructed on the north side of Montezuma Road, north of the Ski Tip residential development. Most of the site is already cleared of trees and serves as snow storage in winter. Since it would be adjacent to an existing county road and residential area, and nighttime use would probably not be necessary, effects to lynx would be insignificant.

Build-out of Summit County is predicted to occur within the next few decades. It can be assumed that much non-protected private property in the Keystone, Summit Cove, Soda Creek and Montezuma areas will be developed for residential and commercial purposes during the interim. The local human population is certain to increase, with associated traffic, loss of conifer forest, dogs, and other related risks to lynx. The effect to lynx will be negative. However, considering the existing (developed) condition in these areas, the effects should be insignificant.

South Game Creek Land Exchange

The Forest Service does foresee Tribal, State, private or local actions that may occur on the acquired land parcels. It is not unreasonable to expect development to occur on the land parcel transferred to the jurisdiction of Vail Associates. Both within the development area and in the surrounding area, some development has already occurred and will probably continue to experience future development. At this time, any future plans for this parcel of land are unknown, however most actions may result in future section 7 consultations.

West Lake Creek Land Exchange

There are no cumulative actions or effects, or connected actions associated with the proposed action that would substantially change land management activities and impair wildlife use patterns in the vicinity of the exchange parcels considered herein.

Woods Lake Hydroelectric Project

An assessment of actions on-going and planned by entities outside the Federal government reveals very little activity within the Frying Pan North LAU. No new State or county actions are planned. From a review of county-approved private actions, one single-family home is foreseen to be built on private land parcels located within the LAU. The construction will occur approximately 5.5 miles south of the project area, on the North shore of Reudi Reservoir. The White River National Forest did not map lynx habitat on private lands, therefore this information is not available for analysis of baseline distribution of habitat within the LAU. However, reconnaissance of the LAU reveals that the home site is located on private land and is adjacent to vegetation mapped largely as non-habitat, including aspen and mountain shrub. Vegetation along the North shore of Reudi Reservoir is primarily non-lynx habitat interspersed with corridors of suitable habitat. The location of the planned construction is not within a corridor of suitable habitat, and is adjacent to the water.

Effects associated with home building predominantly involve on-site habitat loss or alteration, potential disturbance to wildlife from activity at the home site, and disturbance associated with human travel to and from the site. Because these effects occur primarily in habitats mapped as non-habitat or private, and in areas not associated with lynx foraging or denning activities, cumulative effects to the LAU from private home building would be very minor and are insignificant and discountable. The amount of potential lynx habitat that would be affected by the cumulative impact of these anticipated actions is too small to be measured and would not have an overall affect on the use of the LAU by a resident lynx. The potential of any of the current or proposed development actions displacing a lynx, or creating a change in a movement pattern is very unlikely due to the low habitat value of the private lands. Furthermore, there is a low likelihood of a lynx being in the area of the developments while they are occurring.

Missionary Ridge Burned Area Timber Salvage Project

It is not unreasonable to assume that residential and commercial development will continue in the Animas, Florida, and Los Pinos drainages. However, the San Juan National Forest does not have knowledge of any proposed Tribal, State or local projects that could adversely affect Canada lynx.

Millswitch Vegetation Management Project

The Colorado Department of Transportation has proposed an escape ramp project on Monarch Pass (2-3 acres). The county will be conducting powerline maintenance on the Gunnison Ranger District that may affect about 40 acres of lynx habitat. Excluding these two projects, which will likely require future section 7 consultation, there are no other future State, Tribal or private actions that are reasonably foreseeable within the action area.

Snowshoe and Ruby Grazing Allotment Permit Renewals

The Forest Service does not anticipate that there are future State, Tribal or private actions that are reasonably foreseeable within the action area that may affect the Canada lynx.

Galloping Goose Trail

The Forest Service does not anticipate any future State, Tribal or private actions that are reasonably foreseeable within the action area that may affect the Canada lynx.

The Nature Conservancy's Small Tracts Acquisitions

The Forest Service does not anticipate any future State, Tribal or private actions that are reasonably foreseeable within the action area that may affect the Canada lynx.

James Lucas Small Tracts Act/Land Interchange Project

The landowner will likely construct a holding tank for a leach field on the parcel once it becomes private property. The cabin may also be enlarged at some point in the future, thus rendering the land unusable by the lynx. The result of any action on the private lands will likely by insignificant and/or discountable to lynx due to human presence on the property, that may already discourage lynx from using any habitat that may occur there.

Sheep Creek II Vegetation Management Project

Telecommunications, roads, power lines and a 278-acre subdivision (Pear Creek Estates) are currently proposed in the LAU, near the existing Crystal Lakes subdivision. These lands currently contain winter forage, unsuitable habitat and low quality suitable habitat. Development would severely degrade the habitat and, possibly make it unusable for any future lynx activity. A loss of all 278 acres, or 0.25 percent of the total LAU, is assumed as a result of the subdivision.

There are 2,035 acres of private land and 4,794 acres of State land located within the project area. Of these, 102 acres of State land are located in the LAU and 3,125 acres of private lands are located in the LAU. There are no harvest treatments currently proposed for either. However, prescribed burning is proposed on State lands in the eastern portion of the project area. This will temporarily affect 102 acres of foraging habitat by reducing the amount of prey species available for 15-40 years. Temporary loss of 102 acres of foraging habitat is insignificant in terms of the overall habitat within the LAU, since LCAS standards and guidelines will continue to be met.

La Manga Beetle Salvage Sale

There are 279 acres of non-federal land within the Victoria-Chama LAU and 2112 acres of non-federal land within the Riot-Archuleta LAU. Timber removal and grazing are known to occur on these lands, but to an unknown extent.

All of the non-federal acreage in the Victoria-Chama LAU occurs along the eastern property boundary, and is a result of the irregular shape of that boundary. There are no true non-federal "in-holdings" within this LAU. Although it is not fully known what activities are occurring on non-federal lands, timber removal and grazing may occur to an unknown extent. Even if we assume a worst-case, non-plausible scenario and consider all suitable lynx habitat on non-federal lands will be converted to non-suitable habitat, there would be less than 1.0 percent additional loss of suitable habitat for the LAU on non-federal lands. Cumulatively, suitable habitat acreage would change from 98 percent to 97.4 percent, and unsuitable from 2 percent to 2.6 percent, well below the 30 percent cap on unsuitable habitat within a LAU.

Cumulative effects on Federal lands, non-federal lands, and the combined effect, assuming a worst-case scenario on non-federal lands.

Victoria-Chama LAU	FEDERAL LAND	NON-FEDERAL LAND	COMBINED LANDS
TOTAL ACRES LYNX HABITAT	41,020	279	41,299
TOTAL SUITABLE ACRES	40,200 (98%)	0 (0%)	40,200 (97.4%)
TOTAL UNSUITABLE ACRES	820 (2%)	279 (100%)	1099 (2.6%)

Adjacent to and within the Rito-Archuleta LAU, 2112 acres of lynx habitat and 4930 acres of non-habitat occur on non-federal lands.

Several in-holdings do occur within the Rito-Archuleta LAU. Although it is not fully known what activities are occurring on non-federal lands, timber removal and grazing may occur to an unknown extent. Even if we assume a worst-case, non-plausible scenario and consider all suitable lynx habitat on non-federal lands will be converted to non-suitable habitat, there would be less than 5 percent additional loss of suitable habitat for the LAU on non-federal lands.

Cumulatively, suitable acreage would change from 84.8 percent to 80.6 percent, and unsuitable from 15.2 percent to 19.4 percent, well below the 30 percent cap on unsuitable habitat within a LAU.

Cumulative effects on Federal lands, non-federal lands, and the combined effect, assuming a worst-case scenario on non-federal lands.

Rito-Archuleta LAU	FEDERAL LAND	NON-FEDERAL LAND	COMBINED LANDS
TOTAL ACRES LYNX HABITAT	40,514	2112	42,626
TOTAL SUITABLE ACRES	34,340 (84.8%)	0 (0%)	34,340 (80.6%)
TOTAL UNSUITABLE ACRES	6174 (15.2%)	2112 (100%)	8286 (19.4%)

Buffalo Pass Campground – Tres Cabras Timber Sale

Although these projects' effects cannot be specifically analyzed at this time, they are not expected to be significant nor exceed the cumulative 5 percent cap for degrading denning and/or winter foraging habitat or the 30 percent cap of unsuitable habitat within the LAU. There are no other known or anticipated projects in the general area that might cumulatively impact lynx or lynx habitat.

The Bonanza-Cochetopa LAU has a total of 4,869.53 acres of private and State land within its boundary. These private and State lands contain 2,580.12 acres of lynx habitat and 2,289.41 acres of non-lynx habitat. The non-federal acreage is scattered throughout the LAU with a concentration of acreage centered around the town of Bonanza.

Total acres of lynx habitat on non-federal lands within the Bonanza-Cochetopa LAU.

TYPE OF HABITAT	ACRES
Denning	750.41
Winter	989.53
Other	830.09
Unsuitable	10.09
TOTAL LYNX HABITAT	2580.12
Non-Habitat	2289.41

The remaining non-federal lands have not experienced any recent past changes and no foreseeable changes in current use practices are predicted. The baseline of current conditions is not expected to change, so there are no expected cumulative effects from actions on private or State holdings within the Bonanza-Cochetopa LAU.

Spruce Hole Blowdown Small Sale

There are 279 acres of non-federal land within the Victoria-Chama LAU and 2,112 acres of non-federal land within the Riot-Archuleta LAU. Timber removal and grazing are known to occur on these lands, but to an unknown extent.

All of the non-federal acreage in the Victoria-Chama LAU occurs along the eastern property boundary, and is a result of the irregular shape of that boundary. There are no true non-federal "in-holdings" within this LAU. Although it is not fully known what activities are occurring on non-federal lands, timber removal and grazing may occur to an unknown extent. Even if we assume a worst-case, non-plausible scenario and consider all suitable lynx habitat on non-federal lands will be converted to non-suitable habitat, there would be less than 1.0 percent additional loss of suitable habitat for the LAU on non-federal lands. Cumulatively, suitable habitat acreage would change from 98 percent to 97.4 percent, and unsuitable from 2 percent to 2.6 percent, well below the 30 percent cap on unsuitable habitat within a LAU.

Cumulative effects on Federal lands, non-federal lands, and the combined effect, assuming a worst-case scenario on non-federal lands.

Victoria-Chama LAU	FEDERAL LAND	NON-FEDERAL LAND	COMBINED LANDS
TOTAL ACRES LYNX HABITAT	41,020	279	41,299
TOTAL SUITABLE ACRES	40,200 (98%)	0 (0%)	40,200 (97.4%)
TOTAL UNSUITABLE ACRES	820 (2%)	279 (100%)	1099 (2.6%)

Adjacent to and within the Rito-Archuleta LAU, 2,112 acres of lynx habitat and 4,930 acres of non-habitat occur on non-federal lands.
Several in-holdings do occur within the Rito-Archuleta LAU. Although it is not fully known what activities are occurring on non-federal lands, timber removal and grazing may occur to an unknown extent. Even if we assume a worst-case, non-plausible scenario and consider all suitable lynx habitat on non-federal lands will be converted to non-suitable habitat, there would be less than 5 percent additional loss of suitable habitat for the LAU on non-federal lands. Cumulatively, suitable acreage would change from 84.8 percent to 80.6 percent, and unsuitable from 15.2 percent to 19.4 percent, well below the 30 percent cap on unsuitable habitat within a LAU.

Cumulative effects on Federal lands, non-federal lands, and the combined effect, assuming a worst-case scenario on non-federal lands.

Rito-Archuleta LAU	FEDERAL LAND	NON-FEDERAL LAND	COMBINED LANDS
TOTAL ACRES LYNX HABITAT	40,514	2112	42,626

TOTAL SUITABLE ACRES	34,340 (84.8%)	0 (0%)	34,340 (80.6%)
TOTAL UNSUITABLE ACRES	6174 (15.2%)	2112 (100%)	8286 (19.4%)

Outfitter and Guide Special Use Permit Renewal

There is expected to be some cumulative effects on the lynx habitat as a result of on-going activities on non-federal lands throughout the action area. However, the Forest Service does not anticipate that those actions will affect lynx as actions generally occur outside of lynx habitats.

Aspen Ridge Road Easement and Plowing Authorization

The Forest Service does not anticipate that cumulative effects are reasonably certain to occur within the action area.

Box Creek Watershed Restoration Project

The following non-federal activities are reasonably likely to occur in the future within the action area: Recreational activities including hiking, bicycling, cross-country skiing, mountain peak climbing, and dispersed camping as described in the Environmental Baseline section above. No additional snow-compacting uses are proposed

Most legal land claims found within the project area were established for right-of-way access needs. Holders of these permits and easements include Lake County, and the State of Colorado Department of Highways. These uses are long-term and are likely in perpetuity. The Box Creek project area is also transected by the Homestake water transmission pipeline, owned and operated by the cities of Colorado Springs and Aurora. This use is also perpetual. There are no filings or proposals submitted to the Lake County Building Department for State or private expansions or developments adjacent to the project area.

Box Creek monitoring plan addresses disturbance in areas of newly regenerated lynx winter foraging and denning habitat. Winter use will be discouraged or limited in areas where it is shown to compromise lynx habitat.

Other harvest activities that are expected to occur within the Tennessee Pass LAU includes small-scale actions (public fuel wood, post and pole sales, and house logs) and amount to less than 400 acres (4.6 percent over the next ten years). The combined acreage of the past and existing public fuel wood harvest units and the Proposed Action is within the 15 percent standard for a 10-year period.

Green Ridge Mountain Pine Beetle Treatment

Private land owners have planned logging treatments in adjacent forests. Their purpose is to salvage beetle-killed trees and to suppress mountain pine beetle numbers. Many of the nearby acres affected by past, present and reasonably foreseeable timber harvests have not or would not in the future impair suitable habitat sufficiently to change it to unsuitable habitat.

With nearly 39,000 acres of suitable habitat in the Green Ridge Analysis Area classified as "other" habitat (and nearly 89,000 acres within the combined Sheep Mountain and Owl Mountain LAU's), there is a substantial buffer to adverse change in this habitat type locally. Therefore, any cumulative effects to lynx are limited in magnitude and duration because most habitats, among all land ownerships, would remain in suitable condition and because the existing quantity of other habitat is large. Moreover, changed vegetative conditions, including conversion of mature forest stands to young forest, have a place in meeting the life requisites of lynx.

Lost Park Grazing Allotment

The Forest Service does not anticipate any cumulative effects to lynx related to this action.

Weiham Driveway Construction

Implementation of the Weiham Driveway project will likely result in a future residential development on connecting private land in other lynx habitat. The expected impact will be no more than 5 acres. Loss of an additional 5 acres of habitat within the LAU is not considered significant and any effect discountable to lynx. The Forest Service does not anticipate any other cumulative affects related to this action.

Bear River/Dunckley Pass/Lower Trout Creek Prescribed Burns

The Forest Service does not anticipate any actions that may result in effect to the Canada lynx.

Webster Pass Mining Exploration 2003

Small-scale developments on private land are expected to continue, principally outside of lynx habitat but within the LAU boundary. There are no expected substantial changes in recreational use by forest visitors in the LAU. There are no anticipated cumulative effects from future, State or private activities that would significantly alter the function of the LAU or linkages between this and adjacent LAUs. No ski area developments are anticipated.

Mount Massive Route Stabilization Project

The Forest Service does not anticipate any actions that may result in effect to the Canada lynx.

Dinner Park Timber Sale

There is no other reasonably certain future activities expected to occur on non-federal land.

CONCLUSION

After reviewing the current status of the Canada lynx, the environmental baseline for the action area, the direct and indirect effects of the action, and the cumulative effects, it is the Service=s biological opinion that the effects of the proposed projects individually and cumulatively, will not jeopardize the continued existence of the Canada lynx, and the effects are insignificant and discountable to the Canada lynx. Critical habitat has not been designated for this species, therefore, none will be affected.

Although this biological opinion covers 32 different actions, and those actions have been analyzed individually, the Service finds it appropriate to summarize the overall action and the effects on lynx and lynx habitat to the Southern Rockies Ecosystem. Most of the individual actions were located within a single LAU, with very few impacting more than one LAU. Those actions that occur within multiple LAUs were evaluated to ensure that movement capability between adjacent LAUs was maintained. Many of the actions met the criteria, set forth in the lynx screening process, which was considered extremely conservative, compared to conservation standard and guidelines within the LCAS. The LCAS was evaluated on its ability to conserve lynx when used in concert with existing planning documents. The October 2000 biological opinion concluded, that in general, actions that followed the standards and guidelines of the LCAS would only result in effects to lynx that were considered insignificant and/or discountable to lynx. Through individual analysis of the 32 actions, all were found to have insignificant and/or discountable effects to lynx. We can therefore conclude that within the Southern Rockies Region, the actions viewed collectively will result in insignificant and/or discountable effects. The actions are fairly evenly distributed across the ecosystem, however, some actions have a higher level of negative effect than others. Many of the large-scale vegetation management actions will have short-term negative effects, but are likely to result in beneficial effects to lynx habitat in the future. Vegetation management actions of the scale presented in the individual actions are small compared to the overall quantity of habitat within the Southern Rockies. None of the proposed actions will cause habitat conditions in any LAU to individually exceed those recommended in the LCAS, or collectively exceed those recommended for the Southern Rockies Ecosystem. Taken as a whole, the 32 actions are found to result in effects that are insignificant and/or discountable to the Canada lynx in the Southern Rockies Ecosystem.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

Amount or Extent of Take Anticipated

The Service does not anticipate that the proposed actions, individually or collectively, will result in any incidental take of Canada lynx.

Effect of the Take

Since no incidental take is anticipated, there will be no effects to lynx due to take.

REASONABLE AND PRUDENT MEASURES

There are no reasonable and prudent measures necessary and appropriate since no incidental take is anticipated.

TERMS AND CONDITIONS

No terms and conditions are necessary as no incidental take is anticipated and no reasonable and prudent measures are required.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act requires Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

The Forest Service should continue to consider the standards and guidelines of the LCAS in project development to aid in the conservation of the Canada lynx

REINITIATION-CLOSING STATEMENT

This concludes consultation on the action outlined in your April 2, 2003, request for consultation for the 32 batched projects within Colorado. As provided in 50 CFR 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: 1) the amount or extent of incidental take is exceeded; 2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; 3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or 4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

If the Service can be of further assistance, please contact Kurt Broderdorp at the letterhead address or (970) 245-3920 or 243-6209, extension 24.

Sincerely,

Richard P. Kuegan Acting for

Allan R. Pfister
Acting Colorado Field Supervisor

cc: FWS/ES/RO, Lakewood (Attn: Janet Mizzi)
FWS/ES/FO, Lakewood
CDOW, Durango (Attn: Scott Wait)

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